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ABSTRACT

The New England Board of Higher Education presents findings and recommendations concerning the optometric, osteopathic, and podiatric education in the New England area. After a description of each of the professions, the following topics are discussed: interprofessional relationships, manpower needs, educational demands, college programs, financial and cost estimates, recent developments, and alternatives for optometric, osteopathic, and podiatric education. Tables cover: (1) student grade-point average; (2) enrollment by profession, by school, by minority groups, and by males and females; (3) student costs; (4) manpower statistics by profession; and (5) operating expenses for each professional institution. (KE)

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Prepared by

**The New England
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U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

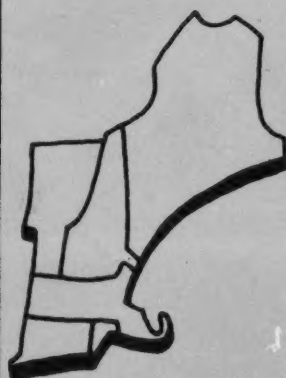
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William K. Selden
Project Director

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Under HRA Contract
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U.S. DEPARTMENT OF HEALTH,
EDUCATION, AND WELFARE
Public Health Service
Health Resources Administration
Bureau of Health Manpower

DHEW Publication No.
(HRA) 76-19

NEW ENGLAND BOARD OF HIGHER EDUCATION

OFFICE OF THE DIRECTOR

August 15, 1975

Dr. Thomas Hatch, Director
Division of Associated Health Professions
Bureau of Health Resources Development
Health Resources Administration
U.S. Public Health Service
Department of Health, Education, and
Welfare
Bethesda, Maryland 20014

Dear Dr. Hatch:

In accordance with provisions in the contract between the Health Resources Administration and the New England Board of Higher Education, I am pleased to submit this report of findings and conclusions as the result of work done under HRA contract N01-AH-44102. It represents, in its conclusions and recommendations, opinions of the Senior Project Director, William K. Selden. Although he has presented his observations to the members of the New England Board of Higher Education, it has not yet taken action with respect to any of the recommendations.

I anticipate that in the near future the Board will develop plans for further action in accordance with the proposals set forth in the final chapter of the report. While some details of the Board's proper role in furthering the purposes of the report's recommendations must be clarified, I do wish to emphasize the need for and the Board's support of cooperative recognition of the importance to New England of regional educational programs in optometry, osteopathy and podiatry for the future delivery of health care to citizens of this six-state region. We do appreciate the interest that you and the members of your staff are demonstrating in these needs.

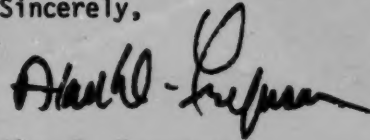
Let me comment that we have been consistently pleased with the superior performance of the staff. We are, of course, gratified that so complex a study has been completed ahead of schedule and with concomitant cost savings to the Federal government. We are indebted to the Health Resources Administration for the fiscal support to carry out this important piece of health professions research and for the excellent supervision and assistance of Dr. Nathan Watzman and others at HRA. We are confident that the findings of this report and the recommendations made by the Senior Project Director will be very instrumental in maintaining education and health care delivery for this region in the areas of optometry, osteopathy and podiatry. We are sanguine that the work done and the final report will serve as milestones in the solution of the problems of

Dr. Thomas Hatch

August 15, 1975

the Massachusetts College of Optometry. And we believe that this contract has been an important building block toward the development in New England of a horizontally integrated, multi-state supported, regional health professions training and research center. Finally, let me say that the support which you and Dr. Kenneth M. Endicott, Administrator of the Health Resources Administration, have given to this effort has been both substantial and appreciated.

Sincerely,

A handwritten signature in dark ink, appearing to read "Alan D. Ferguson". The signature is fluid and cursive, with a large, stylized initial "A".

Alan D. Ferguson

ADF/sm
Enclosure

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August 1, 1975

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Alan D. Ferguson, Ph.D.
Executive Director
New England Board of Higher Education
40 Grove Street
Wellesley, Massachusetts 02181

Dear Dr. Ferguson:

It is my pleasure to submit to you the final report of the Health Sciences Research Project.

In our investigations and analyses, primary emphasis has been placed on continued provision of optometric education in New England with attention to "the proposition that the Massachusetts College of Optometry (MCO) should be organized, administered, and supported as a public New England regional facility." Our conclusions indicate that the college is operating at present on an extremely precarious basis, and that steps should be taken immediately to broaden its sources of support; otherwise it may soon encounter difficulties in meeting its financial obligations. The New England Board of Higher Education is urged in our recommendations to assume leadership in this situation by calling to the attention of the six state governments the benefits that would accrue to the citizens of all the states if each shared in the governance and financing of a regional educational program in optometry.

The project has also addressed the longer term by giving attention to "the feasibility of establishing, for the New England region, a horizontally integrated training and research facility encompassing related health professions." The conclusions of this report attest to the feasibility of such an institution that might initially include education for the professions of optometry, osteopathy and podiatry. In fact, the report identifies the need for the provision of education in New England for each of these three professions if services by such health professionals are to be continued and maintained for the benefit of the citizens of this six-state region. It is recommended that a program planning project be implemented as soon as possible in order that inter-disciplinary curricula could be developed for such a regional academic health center. The program planning project should include consideration of architectural, engineering and financial needs, as well as the form of governance for this proposed multi-state supported facility. It is proposed that the New England Board of Higher Education assume the leadership in this enterprise by seeking the necessary funding and by serving as the coordinating agency for the program planning project with which the societies representing the directly affected professions should be expected to cooperate.

The report provides background and statistical information related to the education for and provision of optometric, osteopathic and podiatric health care in New England. The final three chapters of this ten chapter report

include a summary of the information presented in the first seven chapters and also contain the conclusions and recommendations. The recommendations by themselves are reproduced for ready reference immediately following this letter of transmittal.

We are indebted to the members of the several advisory committees, whose names are identified in the front part of this document, for the assistance they provided in helping us to analyze the extensive information collected by the staff during the conduct of this report.

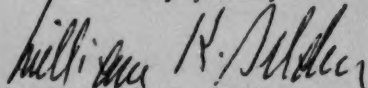
The members of the staff were especially helpful to me. Cynthia G. Heiland coordinated the many and varied activities and performed these functions in a considerate and gracious manner. Daniel J. Lupfer conducted the statistical work and wrote chapters III, IV and the first half of VI; these chapters are evidence of the careful attention he gave to the manpower analyses without which the conclusions could not have been substantiated. The financial analyses contained in chapters VI and VII were provided in a most efficient manner by Edward J. Norcott with the advice of Paul V. Cusick. Mitchell Wendell, a consultant on governmental affairs, prepared the appendix containing specific suggestions for changing the legal and financial status of MCO. Jeanne C. Gentile prepared the extensive typed copies with neatness and dispatch, and in a cheerful and diligent manner. The completion of this report was made possible by their collective assistance.

Officers of various professional societies and institutions, as well as of agencies of the federal government were generously cooperative. We are especially appreciative of the ready response to our numerous requests for information furnished by William R. Baldwin, President, and other members of the staff of the Massachusetts College of Optometry. Thomas Hatch and Nathan Watzman of the Health Resources Administration, United States Public Health Service, provided affirmative support for the project from its inception.

It has been a pleasure to serve as the director of a project sponsored by the New England Board of Higher Education. You, Mrs. Joan-Faye Livergood, Associate Director, and your staff have provided us with every type of assistance required for this project. We are likewise grateful for the improvements suggested in the report by the editing of Mrs. Dorothy Piper Germain and Mrs. Phyllis Lary.

Now that the project is completed it is our hope that the recommendations will be implemented as early as possible.

Sincerely yours,


William K. Selden

WKS:j1

SUMMARY OF RECOMMENDATIONS

RECOMMENDATIONS FOR SUBSEQUENT ACTION

A - CREATION OF A REGIONAL ACADEMIC HEALTH CENTER IN NEW ENGLAND

Recommendation A 1

The New England Board of Higher Education should serve as the coordinating agency for a program planning project and sponsor the analysis necessary to implement the eventual creation of a regional academic health center in New England to include programs of study in such health professional fields as optometry, osteopathy and podiatry, in addition to others that might later be included.

Recommendation A 2

The New England Board of Higher Education should -

- (a) seek the funding necessary for the program planning project and*
- (b) encourage support and participation on the part of the appropriate health professional societies in the project.*

Recommendation A 3

In analyzing possible sites for the establishment of a regional academic health center in New England, the program planning project should give special attention to property in Grafton, Massachusetts, and to property owned by Northeastern University within the greater Boston area.

Recommendation A 4

The program planning project for a regional academic health center in New England should be expected to analyze and develop specific proposals with respect to the following topics:

- (a) form of control and administration*
- (b) sources of financing*
- (c) inter-disciplinary curricula*
- (d) clinical education and services*
- (e) architectural and engineering plans*
- (f) inter-institutional cooperation with neighboring universities*

- (g) *budgets for construction, start-up and annual operating expenses.*

RECOMMENDATIONS FOR IMMEDIATE ACTION

While the eventual creation of a regional academic health center is a long-term project, there are actions that can be taken more immediately with respect to optometric, osteopathic and podiatric education in New England. In fact, if action is not taken immediately with respect to optometry, the education that is now being offered in this professional field, primarily to residents of this region, may be severely impaired.

B - NEW ENGLAND COLLEGE OF OPTOMETRY

Recommendation B 1

The Board of Trustees of the Massachusetts College of Optometry should take immediate action that will -

- (a) raise tuition charges for all students;*
- (b) expand the college's program of solicitation of gifts from all sources;*
- (c) reduce expenditures wherever possible without impairment of its educational program;*
- (d) officially change the name of the institution to the New England College of Optometry;*
- (e) revise the college's charter and by-laws, as appropriate, to permit appointment of some members of the board of trustees by the governors or other designated officials of each state (see Appendix A for proposed revision in charter and by-laws); and*
- (f) declare the desire and the intent of the college (i) to become a regional multi-state supported program of professional study, and (ii) to be integrated into a regional academic health center.*

Recommendation B 2

The Massachusetts College of Optometry should intensify its efforts -

- (a) to devise and seek adoption of a system of financing by which each of the six New England states shares equitably in the annual operating costs of the institution;*

- (b) to develop, as an interim measure, contracts with the individual states by which each state provides annual funding in proportion to the number of places in each entering class guaranteed for qualified residents from the state; and
- (c) to obtain federal funding to assist the college during the transition period from an independent institution to one that is multi-state supported and regionally controlled.

Recommendation B 3

The New England Board of Higher Education should provide all appropriate assistance to the Massachusetts College of Optometry as it seeks federal and state financing and endeavors to be converted from an independent institution to one that is multi-state supported and regionally controlled.

Recommendation B 4

The Board of Trustees of the Massachusetts College of Optometry should take action authorizing that steps be taken, as soon as possible, to negotiate and execute a contract between the college and Northeastern University, and other appropriate institutions, providing for as many areas of cooperation as possible between MCO and the other institution or institutions, and also providing that the contract or contracts be subject to review at the end of three years following execution.

C - NEW ENGLAND COLLEGE OF OSTEOPATHIC MEDICINE

Recommendation C 1

The New England Foundation for Osteopathic Medicine should -

- (a) continue with its efforts to establish a New England College of Osteopathic Medicine to begin operations at the earliest feasible date;
- (b) declare at the present time its intention to cooperate in the planning for and establishment of a regional academic health center in New England; and
- (c) seek eventually to incorporate the New England College of Osteopathic Medicine into a regional academic health center, if and when such a center is established in New England.

D - NEW ENGLAND COLLEGE OF PODIATRIC MEDICINE

Recommendation D 1

The American Podiatry Association should assume leadership and seek the cooperation of each of the state podiatric societies in New England in

creating a New England Foundation for Podiatric Medicine whose primary purpose would be the establishment and support of podiatric medical education in this six-state region.

Recommendation D 2

The New England Board of Higher Education should -

- (a) assume leadership in initiating discussions between the New York College of Podiatric Medicine and Northeastern University, the University of Massachusetts at Worcester, and other appropriate universities in New England, leading to a contractual, cooperative arrangement by which qualified residents of these six states could be admitted to a university in New England for the first part of their education in podiatry followed by enrollment for the final part at the New York College of Podiatric Medicine; and*
- (b) invite representatives of the New England Foundation for Podiatric Medicine to participate in such discussions between the New York College of Podiatric Medicine and individual universities in New England.*

Recommendation D 3

The New England Board of Higher Education and the New England Foundation for Podiatric Medicine should each take steps, which are intended to lead to the offering of podiatric education in this six-state region, only in such manner as to facilitate the eventual inclusion of podiatric education in a regional academic health center, if and when such a center is established.

OTHER RECOMMENDATIONS

E - EDUCATION TO MEET HEALTH CARE MANPOWER NEEDS

Recommendation E 1

The New England Board of Higher Education should assume leadership in the preparation and dissemination of information on a regular basis with regard to -

- (a) educational provisions for meeting manpower needs in the health professions in New England; and*
- (b) the benefits that could accrue to the residents of the six New England states by the establishment and operation of a regional academic health center.*

F - STIMULATION BY THE PROFESSIONS

Recommendation F 1

The Massachusetts College of Optometry should pursue every appropriate measure to encourage members of the profession of optometry in each of the New England states actively to encourage the states to finance the college and to encourage the conversion of the college to a regional, multi-state supported institution, eventually to be incorporated into a regional academic health center.

Recommendation F 2

The New England Foundation for Osteopathic Medicine should pursue every appropriate measure to encourage members of the profession of osteopathy in each of the New England states to support actively the creation of a New England College of Osteopathic Medicine, eventually to be incorporated into a regional academic health center.

Recommendation F 3

Until such time as a New England Foundation for Podiatric Medicine has been established, the American Podiatry Association, in cooperation with the podiatric societies in each of the New England states, should pursue every appropriate measure to encourage members of the profession of podiatry in these states to support actively the initiation of a program of education in podiatric medicine in this region and to support the eventual inclusion of such a program in a regional academic health center.

G - INTER-PROFESSIONAL STUDIES

Recommendation G 1

The New England Board of Higher Education should -

- (a) establish an inter-professional committee to be concerned with eye care personnel;*
- (b) initially invite representatives of the optometric profession and representatives of the medical specialty of ophthalmology in equal numbers to serve on this inter-professional committee with an equal number of knowledgeable, non-health professionals;*
- (c) charge this inter-professional committee with the following responsibilities:*
 - (1) collecting and analyzing information about the types of personnel providing eye care and their distribution in each of the New England states, such eye care personnel*

including, but not limited to, ophthalmologists, optometrists, opticians, and eye care assistants and technicians;

- (2) recommending the content of a desirable academic and clinical inter-disciplinary program in optometric education to be offered in a regional academic health center;*
- (3) reviewing the licensure laws for the practice of optometry and other eye care health professions in each of the states of New England with the intention of making recommendations for their uniformity; and*
- (d) seek funding for support of the activities of this inter-professional committee from the appropriate agency of the federal government.*

INTRODUCTION

As an agency of the six New England states, the New England Board of Higher Education (NEBHE) has been charged to facilitate and expand higher educational capacities within the region, to provide increased access to higher education for the citizens of the six-state area, and to promote the most economical use of higher educational facilities within the region. One of the chartered responsibilities of the Board is to collect, correlate and evaluate data relevant to higher education and to make available the results of such research.

In accordance with this charge, NEBHE has sponsored the Health Sciences Research Project which has been financed under contract with the Health Resources Administration of the Public Health Service of the United States Department of Health, Education, and Welfare.

The project has been conducted by a director and staff who have been aided by invaluable advice and other assistance from members of several advisory committees who are identified at the beginning of this report. However, responsibility for the contents of this report, including its observations, conclusions and recommendations, rests solely with the director.

OBJECTIVES OF THE PROJECT

As stated in the proposal for the contract with the Health Resources Administration, the objectives of the project are:

First - To assemble in complete and logical form, all relevant data pertinent to the needs of the six-state New England region in the area of eye health as performed by the profession of optometry, and particularly as the Massachusetts College of Optometry relates to those needs as a training and research base for this profession.

Second - To analyze and evaluate those data in the light of the proposition that the Massachusetts College of Optometry should be organized, administered and supported as a public New England regional facility, operating to meet the needs as defined in the first objective.

Third - To prepare, on the bases of the data and analysis arising from the first and second objectives, a logical and feasible plan whereby the Massachusetts College of Optometry can be converted to a public institution supported jointly by the six state governments of New England, and to lay this plan before those governments for approval and implementation.

Fourth - To investigate and prepare a report, including recommendations for appropriate further research and implementation activities, concerning the value and feasibility of establishing, for the New England region,

a horizontally integrated training and research facility encompassing related health professions. This initial investigation will include consideration of three health professions: optometry, osteopathy and podiatry.

Since the project is concerned particularly with the opportunities in New England for the study of optometry and with the Massachusetts College of Optometry, primary attention has been focused on this profession, including reference to its relationship with the medical specialty of ophthalmology. At the same time, data have also been collected with respect to the education for and the delivery of health care in New England by the professions of osteopathic medicine and podiatric medicine. Accordingly, in the first four chapters of this report - Descriptions of the Selected Professions, Inter-Professional Relationships, Optometric, Osteopathic and Podiatric Manpower in New England, and Demands for Education in the Selected Health Professions - information is presented as it relates to optometry, osteopathy and podiatry, as well as pertinent information relating to the medical specialties of ophthalmology and orthopedic surgery.

CHAPTER I

DESCRIPTIONS OF THE SELECTED PROFESSIONS

All the health professions have one major characteristic in common. They have been developed and exist for the purpose of providing health care to individual members of the general public. In most cases, their fields of professional responsibility are markedly divergent and identifiably different; in a few cases, their responsibilities converge.

It is not within the province of this project to define the areas of practice appropriate to the professions of optometry, osteopathy or podiatry. On the other hand, it is appropriate to present a brief historical description and other basic facts for each of these professions in order to clarify the professional health services that are encompassed in this report.

OPTOMETRY

DEFINITIONS OF PROFESSIONS PROVIDING EYE CARE

Before presenting a history of optometry, it is necessary to provide definitions of optometry, ophthalmology and opticianry in order to prevent misunderstandings with respect to these three related professions.

Optometry

The Institute of Medicine of the National Academy of Sciences has presented a definition of optometry in its 1974 report of a study, *Costs of Education in the Health Professions*.

The Doctor of Optometry (O.D.) is a health professional who performs eye examinations to determine the presence of visual, muscular, or neurological abnormalities, and prescribes lenses, other optical aids, or therapy such as eye exercises to enable maximum vision. Optometrists are trained to recognize diseased conditions of the eye and ocular manifestations of other diseases, and to refer patients with these conditions to the appropriate health professional.

Optometry was further described in the following terms in a 1970 report from the Secretary of the U.S. Department of Health, Education and Welfare.*

Although the primary service performed by most practicing optometrists is the provision of eye examinations and visual analyses, optometrists are trained to detect any departure from the optimally healthy eye. The scope of optometric services has expanded beyond basic clinical refractions, fabricating and dispensing eyewear; now included are visual screening

* See selected bibliography.

examinations, clinical instrumentation, contact-lens fitting, visual training, orthoptics, low-vision aids for the partially sighted, artificial eyes, industrial vision-consultation, and public and community health. The most rapidly expanding area of service is in school consultation and remedial services for low achievers.

The optometrist is trained and bound by professional ethics to refer patients in whom indications of disease have been found to a physician or other health practitioner for definitive diagnosis and appropriate medical, surgical, or other treatment.

Ophthalmology

An ophthalmologist is a physician with the degree of Doctor of Medicine (M.D.) or Doctor of Osteopathy (D.O.) who specializes in the diagnosis and treatment of all eye diseases. Possessing an unlimited license to practice medicine, the ophthalmologist is authorized to prescribe and administer drugs and to perform surgery, as well as to provide many of the vision care services furnished by the optometrist.

An ophthalmologist may be further identified as being board-certified. A board-certified doctor of medicine has completed three years of residency in ophthalmology in a hospital offering such specialized training and has successfully passed the examinations for certification of the American Board of Ophthalmology or the American Osteopathic Board of Ophthalmology. An ophthalmologist may also have completed his residency but may not have been certified by the American Board of Ophthalmology. Certification is not required to practice ophthalmology, but usually a physician who has completed a residency in this medical specialty voluntarily seeks board certification.

For further clarification, it should be noted that residency programs formerly were offered for those wishing to specialize in eye, ear, nose and throat care, and some physicians who were trained in this specialty are practicing as ophthalmologists. Physicians who now limit their practice to the ear, nose and throat are identified as otolaryngologists.

The term oculist is now less frequently used although it is sometimes applied to the physician who restricts his practice to the eyes but who has not necessarily received specialty training in this field of practice.

Opticianry

An optician makes, fits, supplies, and adjusts eyeglasses according to prescriptions written by optometrists or ophthalmologists to correct a patient's optical defects. An optician does not examine eyes or prescribe treatment.

A dispensing optician in a retail establishment fills prescriptions, takes facial measurements to determine the size and shape of frames and lenses, and later fits and adjusts the frames of eyeglasses to the

requirements of the individual customer. In some states, the practitioner must be licensed to perform these functions. The mechanical grinding, polishing and fitting the lenses in frames is performed by an optical technician according to the specifications established by a dispensing optician, an optometrist or an ophthalmologist.

In addition to these groups of individuals, who provide services related to the care of the eye, there are optometric assistants and ophthalmological assistants who perform only under the direct supervision of an optometrist or an ophthalmologist respectively.

HISTORY OF OPTOMETRY

Two relatively concurrent events took place in the late thirteenth and early fourteenth centuries that led eventually to the development of the profession of optometry. The first was the use of lenses to improve vision and the placing of lenses in frames to create spectacles. The second was the discovery of movable type and the refinement of paper for printing. This latter development encouraged reading among a wider segment of society and necessitated the improvement of vision. Thus developed a new vocation - that of making and selling spectacles.

For many centuries, lenses were prefabricated, and the customer tried spectacles until he found a pair that seemed best able to correct his eye deficiencies. The persons who made and sold these spectacles were frequently trained in a knowledge of mathematics and optics. They were not associated with the profession of medicine, many of whose members until well into the nineteenth century opposed the use of spectacles, preferring to recommend medication, surgery, or general hygiene. Incidentally, this attitude on the part of many doctors of medicine indirectly encouraged the development of the profession of optometry to be independent and self-directed.

As an independent and self-directed profession, optometry, as it was later identified, turned to that field of physics known as optics for many of its scientific and technological advances and improvements. This fact accounts for the later introduction of courses in optometry in the departments of physics of several universities.

The early spectacles contained lenses with limited choices of formulas, and the lenses in a single set of spectacles were made with the same formula for each lens. By the nineteenth century, however, bifocal lenses were devised as a result of suggestions from Benjamin Franklin, lenses to correct astigmatism were fabricated, recognition was given to the different needs of each eye, substantial improvements were made in the centering of lenses based on increased knowledge of physiological optics, and, as a result, prefabrication of lenses gave way in time to the prescribing of lenses for individuals. To prescribe lenses for a person the optometrist had to test the patient's eyes on an individual basis, and this extension of practice led to conflicts with the developing medical specialty of ophthalmology whose members were trained in eye disease, medication and surgery, and whose training and practice did not emphasize refraction and the prescription of spectacles.

The development in the United States of the profession of optometry was accompanied by the establishment of training schools that at the turn of the past century, as in all other professions at that time, were mostly proprietary in nature and generally of questionable academic quality. In 1900, there were some 60 such training schools. However, in 1910, the first university-affiliated course in optometry was offered by Columbia University, and within 15 years three other universities had instituted courses in optometry, usually in close association with the departments of physics, not with the schools of medicine. At the same time, as will be noted later, optometric education was offered by a number of independent colleges.

With the adoption of a licensure law for optometrists in 1901 by the state of Minnesota, legal recognition was given to the profession, and by 1924, similar laws had been passed in all states. Furthermore, through various federal legislation, optometry is recognized as an independent health profession.

The American Optometric Association (AOA), whose membership includes most of the practicing optometrists in the United States, was founded in 1898. Its activities, which are varied, have encouraged continued improvement in the education for and practice of optometry. In addition to the AOA, there is the National Optometric Association (NOA), whose membership includes Blacks, American Indians, Mexican-Americans and Puerto Ricans. The current major activity of the NOA is minority recruitment to the profession. Approximately 60 percent of the members of the NOA, which is an affiliated organization to the AOA, are also members of the AOA.

SCOPE OF OPTOMETRIC PRACTICE

The scope of practice of all vibrant professions is undergoing constant change as a result of scientific discoveries, technological developments, economic forces, revisions in the patterns of delivery of health care, and professional aspirations. Optometry is no exception.

Earlier in this century the entire scope of practice of optometry rested on procedures related to subjective and objective testing for refractive status (focusing) of the eye. It is this specific function that many laymen attribute to optometry without realizing that optometrists are now educated and trained to perform within a larger sphere of responsibilities.

The optometrist continues to perform tests for the purpose of determining the refractive status of the eye, but he also performs tests to verify that the eye is healthy and free from disease as well as tests to determine how the two eyes of a patient function together as part of the neuromuscular system. In addition, the optometrist is concerned with the patient's performance of tasks relating to perceptual responses, color perception, ability to deal with variations in illumination, and other characteristics of the patient's visual system. Should an optometrist detect or suspect disease or other similar abnormality in the patient, he is obliged ethically and morally to refer such a patient to the appropriate doctor of medicine or doctor of osteopathy - an ophthalmologist, neurologist, internist, or general practitioner. The optometrist may also refer a patient to other practitioners such as a dentist or psychologist.

Because of the extent of scope of optometric practice there are some optometrists who become especially proficient in various specialized fields of practice by pursuing further study and tending to concentrate their efforts in such areas as vision training, contact lens fitting, low vision aids, occupational vision problems, or pediatric or geriatric optometry. For some time optometrists have been especially active in the occupational and industrial fields, and this activity is likely to be stimulated further by such developments as the recent federal legislation directed at occupational hazards (see Chapter III for types of practice of optometrists). With some exceptions, optometric care is provided to patients who are ambulatory. Regardless of location or emphasis of practice an optometrist must undergo rigorous academic education and clinical training in order to be able to provide good eye care.

EDUCATIONAL REQUIREMENTS FOR THE DEGREE OF DOCTOR OF OPTOMETRY

When the scope of practice of an optometrist was limited primarily to subjective and objective testing for refractive status of the eye, the length of the course and the subject matter required of the optometric student were short and almost sketchy compared to present-day requirements. Today the course in optometry, which requires a minimum of six years after completion of secondary school, is culminated with the awarding of the degree of Doctor of Optometry (O.D.).

At the present time all the schools of optometry require a successful applicant to have completed a minimum of two years of college work. However, in practice at least 50 percent of the entering students have previously obtained their baccalaureate degrees, and of these some even have advanced degrees. Fewer than a third of the students who are now entering optometric schools do so with only two years of college.

For admission students are expected to have completed college courses in biology or zoology, chemistry, English, mathematics, and physics, and also, depending on the requirements of the individual school of optometry, courses in humanities, social studies, and psychology. In addition to transcripts of previous school and college records that each candidate for admission must present, the individual must also sit for the Optometry College Admission Test. This test has been a standard requirement during the past few years.

The curricula in the schools of optometry follow a generally similar pattern. For example, at the Massachusetts College of Optometry (MCO), the professional curriculum is organized around ten major subject areas - five within each of the two major divisions:

Visual Science

Behavioral Sciences
Environmental Vision
Optics
Physiological Optics
Physiological Sciences

Patient Care

Clinical Pathology
General Optometry
Pediatric Optometry
Rehabilitative Optometry
Social Optometry

At MCO, two patterns of education that lead to the Doctor of Optometry degree are offered. The one that enrolls the larger proportion of students is for those who have completed two to five years of collegiate preparation and is four academic years in length. The other is two calendar years in length and is limited to individuals who have an earned doctorate degree in one of the sciences.

During the past decade, both the total enrollment of students in the colleges of optometry and the combined previous academic averages of the entering students have been rising. These facts, which were contained in the 1974 annual report of Charles E. Seger, O.D., Chairman of the Council on Optometric Education, to the American Optometric Association, are portrayed in Tables I-1 and I-2.

OTHER EDUCATIONAL OFFERINGS

In addition to the programs leading to the degree of Doctor of Optometry that are offered by all colleges of optometry, those schools that are affiliated with universities usually participate in academic programs that lead to the Master of Science and/or the Doctor of Philosophy degree in physiological optics. Such participation is possible because of the more extensive academic resources of the universities which have schools of graduate studies through which the advanced degrees are offered. At one university-affiliated school of optometry, for example, graduate internships and residencies are offered in various optometric clinical specialties for individuals intending mainly to prepare themselves for clinical faculty positions or for careers emphasizing clinical optometric research.

A form of educational offering in which all colleges of optometry, both university-affiliated and independent, are increasingly involved is continuing education. Nearly 40 states, either by legislation or by regulation, now require proof of regular participation of optometrists in some form of continuing education in order to be eligible for relicensure. Continuing education courses are being offered by many different organizations. The leadership for this educational activity is, however, coming from the schools of optometry, whose importance in the delivery of good health care to the public is thereby expanded.

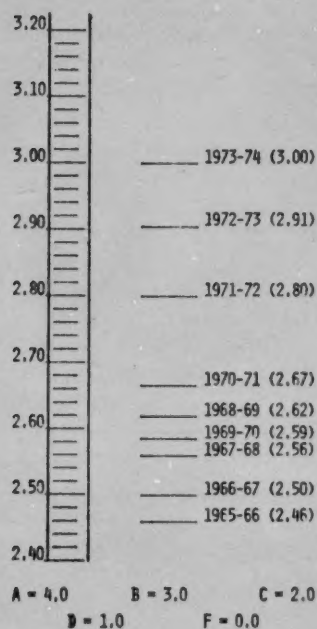
COLLEGES OF OPTOMETRY

Although there were at one time, as previously noted, more than 60 colleges or schools of optometry in the United States, at present, there are only 12. Seven of these are university-affiliated and five are independent. They are identified in Table I-3.

In addition to these institutions at present in full operation, Ferris State College will admit its first class of 21 optometric students in the fall of 1975 into what will be known as the Michigan College of Optometry. The location of the college was established in legislation, to the dissatisfaction of most optometrists, at an institution which has no academic health center and which is situated in a geographical region that will provide, according to optometric educators, inadequate clinical opportunities for students. Legislative action in the states of Florida and Missouri has also

TABLE I-1

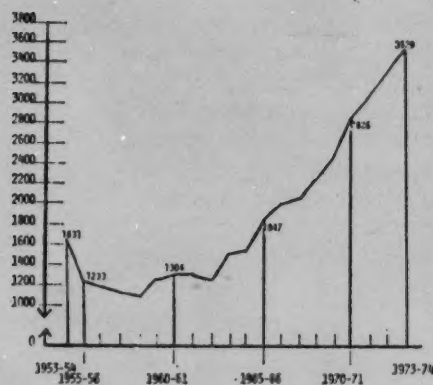
MEAN GRADE POINT AVERAGE
ENTERING OPTOMETRIC STUDENTS
U.S. SCHOOLS AND COLLEGES OF OPTOMETRY



The mean grade point average for entering optometric students took a large jump, with the average now at 3.0 compared to 2.91 a year ago. Seven of the twelve U.S. schools has an entering mean G.P.A. over 3.0, in addition to meeting all other admissions requirements which are considered necessary for professional and educational success.

TABLE I-2

U.S. SCHOOLS AND COLLEGES OF OPTOMETRY
PROFESSIONAL DEGREE PROGRAM ENROLLMENT



The total number of students enrolled in our professional degree program in all schools and colleges of optometry represents an increase of 201 over the past year. For the year '73-'74 the total enrollment was 3,529. In 1958, there were 1,169 enrolled in all schools and colleges of optometry. (In addition, there were 148 optometric technicians and six assistants enrolled in the schools and colleges of optometry, 37 graduate students and 111 special students.)

Source: *The Journal of the American Optometric Association*, Volume 45, Number 8, August 1974, page 921.

TABLE I-3
COLLEGES OF OPTOMETRY

NAME OF INSTITUTION	LOCATION	YEAR FOUNDED	ENROLLMENT 1974-75		ANNUAL TUITION 1974-75*	
			ENTERING CLASS	TOTAL	RESIDENT	NON-RESIDENT
<u>INDEPENDENT INSTITUTIONS</u>						
Illinois College of Optometry	Chicago, IL	1872 ^a	150	516	\$2,570	\$2,570
Massachusetts College of Optometry	Boston, MA	1895 ^b	74	281	2,530	2,530
Pennsylvania College of Optometry	Philadelphia, PA	1919	138	513	2,957	2,957
Southern California College of Optometry	Fullerton, CA	1904	91	280	2,800	2,800
Southern College of Optometry	Memphis, TN	1932	150	556	4,549	6,549
<u>UNIVERSITY-AFFILIATED INSTITUTIONS</u>						
University of Alabama in Birmingham School of Optometry	Birmingham, AL	1969	25	85	900	1,800
University of California, Berkeley School of Optometry	Berkeley, CA	1923	64	220	637	2,137
University of Houston College of Optometry	Houston, TX	1952	66	265	286	1,510
Indiana University Division of Optometry	Bloomington, IA	1951	69	258	900	2,015
State University of New York College of Optometry	New York, NY	1970	25	65	1,600	2,000
The Ohio State University College of Optometry	Columbus, OH	1914	57	210	930	1,980
Pacific University College of Optometry	Forest Grove, OR	1921 ^c	73	280	2,090	2,090

* Note: Includes registration and related fees.

^a Merged 1955.

^b As Klein Optical School.

^c As North Pacific College of Optometry, joined P.U. in 1945.

authorized the establishment of new schools of optometry. The school in the latter state would have admitted its first class in 1975 if the governor had not vetoed the appropriations for its operations.

Consideration is also currently being given to the establishment of additional colleges of optometry in such areas as upper New York State and Virginia. Furthermore, the Southern Regional Education Board has recently completed a study which recommends the creation of a minimum of two colleges in the South.

COSTS OF EDUCATING A STUDENT OF OPTOMETRY

Table I-3 identifies the 12 schools of optometry and lists individual annual student tuition and fees and current charges. These charges do not represent the actual costs of educating a student, which are, in most cases, much larger. The costs are met by income from tuition and fees, charges for clinical services, gifts, support from state treasuries and federal funding, and by income from endowment where such endowments exist.

Because of the considerable variation in practices of accounting among the different types of health education programs, and because of variations among colleges preparing the same type of health personnel, exact figures of educational costs are impossible to attain. Despite these difficulties, the Institute of Medicine of the National Academy of Sciences undertook a study, *Costs of Education in the Health Professions*, and reported its findings in early 1974. Table I-4, taken from that report, indicates the estimated average annual costs of educating an optometric student in 1972-73 in comparison with other selected health professions including osteopathy and podiatry.

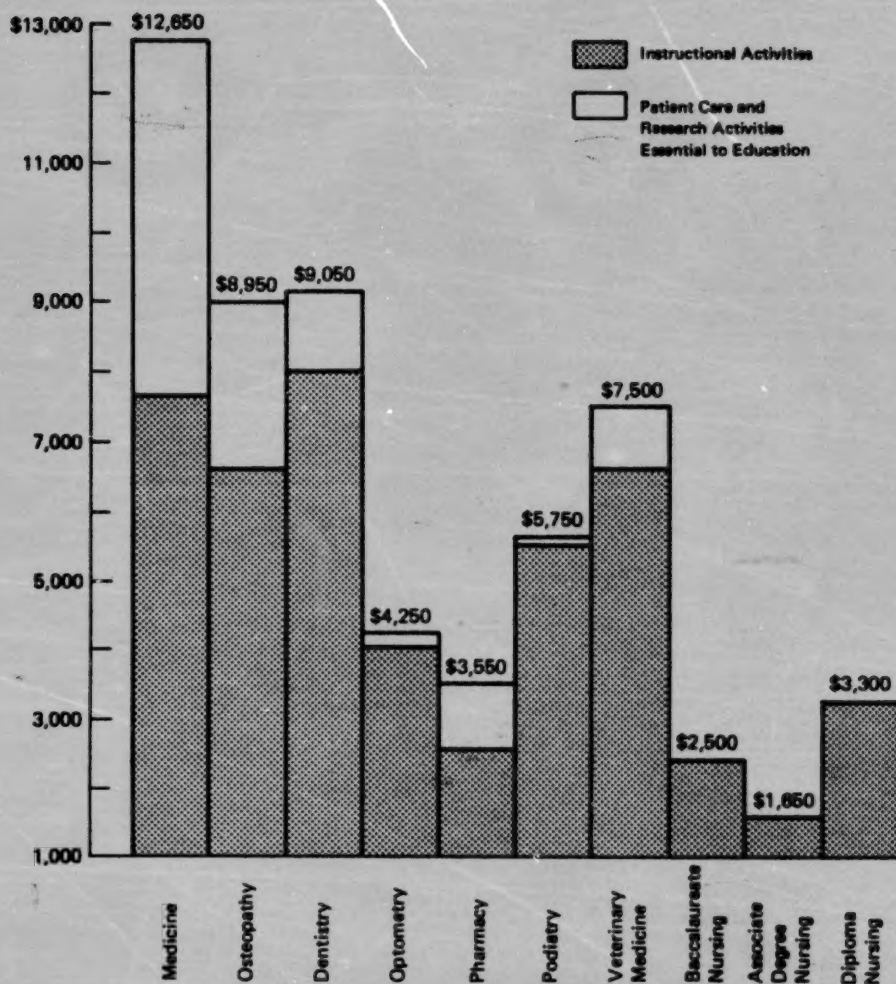
Although optometric educators believe that the indicated average annual cost of \$4,200 underestimates the actual expenses, it should be noted that these costs are approximately one-third of that shown for medical education. If one reflects that an ophthalmologist is a doctor of medicine who has not only completed a four-year medical school education but has, in addition, completed at least three years of residency in ophthalmology, one can gain some conception of the difference in costs to society of education between these two types of health practitioners.

REQUIREMENTS FOR PRACTICE OF OPTOMETRY

There is only one requirement for the practice of optometry. The individual must be licensed by the state in which he or she wishes to practice. All states, including the six New England states, have such laws. The requirements generally include: graduation from high school or equivalent; graduation from an approved school of optometry; minimum age, usually 21; evidence of good moral character; payment of a registration fee; and successful completion of a qualifying examination.

Rhode Island, which has for a number of years required the completion of internships, has more recently revised its licensure law for optometry. It now permits those optometrists who have successfully passed the pharmacology section of the National Board or the State Qualifying Examinations to administer diagnostic pharmaceutical agents.

TABLE I-4
AVERAGE ANNUAL EDUCATION COSTS PER STUDENT BY PROFESSION, 1972-73



Source: *Costs of Education in the Health Professions*, Institute of Medicine (Washington, D.C.: National Academy of Sciences, January 1974).

TABLE 1-5
LICENSURE OF OPTOMETRISTS

	CONNECTICUT	MAINE	MASSACHUSETTS	NEW HAMPSHIRE	RHODE ISLAND	VERMONT
EDUCATIONAL REQUIREMENTS	1 yr. college, and graduation from recognized school of optometry	Graduation from recognized school of optometry	Graduation from recognized school of optometry	1 yr. college, and graduation from recognized school of optometry	Graduation from recognized school of optometry	Graduation from recognized school of optometry
INTERNSHIP REQUIREMENT	None	None	None	None	Six-month internship under supervision of registered optometrist or licensed ophthalmologist	None
COMPOSITION OF LICENSING BOARD	5 O.D.'s appointed by governor; 5-yr. term	6 members, 1 public, 5 O.D.'s, appointed by governor; 5-yr. term	5 members, 1 public, 4 O.D.'s, appointed by governor; 5-yr. term	5 O.D.'s appointed by governor; 5 yr. term	3 O.D.'s appointed by Dir. of Health with governor's approval 3-yr. term	3 O.D.'s appointed by governor; 3-yr. term
NATIONAL BOARD OF EXAMINERS IN OPTOMETRY (NBEO) EXAMINATION	Accepted in lieu of state board exam (state bd. practical exam mandatory) Fee \$150	Accepted in lieu of state board exam (state bd. practical exam mandatory) Fee \$75	Mandatory	Mandatory	Mandatory	Mandatory
STATE LICENSING EXAMINATION	Fee \$150 \$50 written \$100 practical	Fee \$75	Fee \$25 practical exam only	Fee \$25 practical exam only	Fee \$40 practical exam only (following internship)	Fee \$35 practical exam, brief written exam
RECIPROCITY*	Fee \$150 practical exam required; practice in state where licensed minimum 5 yrs consecutively	Fee \$100 practical exam required; practice in state where licensed minimum 3 yrs consecutively	Fee \$50 practice in state where licensed minimum 3 yrs consecutively	Fee \$50 practical exam required; practice in state where licensed minimum 3 yrs consecutively	Fee \$150	Fee \$25 practice in state where licensed minimum 3 yrs consecutively; recommendation from Board in state where licensed
CONTINUING EDUCATION REQUIREMENT FOR REREGISTRATION	None	6 hrs per year	8 hrs per year	6 hrs per year	None	None
REREGISTRATION	Fee \$100 each January	Fee \$25 each March	Fee \$5 each January	Fee \$10 each May	Fee \$5 each January	Fee \$10 each July

NOTE: IN ADDITION TO THE SCOPE OF PRACTICE DESCRIBED IN THE TEXT IT SHOULD BE NOTED THAT RHODE ISLAND PERMITS QUALIFIED OPTOMETRISTS TO ADMINISTER DIAGNOSTIC PHARMACEUTICAL AGENTS.

* ALL NEW ENGLAND STATES REQUIRE THE FOLLOWING FOR RECIPROCAL LICENSURE:

- that state where applicant is licensed affords similar privilege to optometrists licensed to practice in state to which application is being made
- that applicant never failed licensing examination in state in which application is being made
- that applicant intends to reside and practice in state in which application is being made
- that applicant was licensed in accordance with requirements equivalent to those in state in which application is being made.

Table I-5 identifies the major characteristics of the licensure laws for optometry in the New England states.

At present there is no specialty certification in optometry as there is in medicine. However, as previously noted, there are fields of special interest that include environmental or industrial optometry, pediatric optometry, rehabilitative optometry, contact lens and low vision care. To practice in these fields one is not required to take special examinations.

OSTEOPATHY

In this era of increased attention to the economic, political and social issues related to the delivery of health care, it is a common practice to overlook the fact that medical care and health care are not always synonymous and that there is more than one profession of medicine.

DEFINITIONS OF THE PROFESSIONS OF MEDICINE

Webster's New World Dictionary defines medicine as "the science and art of diagnosing, treating, curing, and preventing disease, relieving pain, and improving and preserving health." This definition can be applied to all forms of medicine, whether allopathy, homeopathy, or osteopathy. Therefore, further definitions are required.

Allopathic medicine is the predominant form of medicine practiced in the United States today. It is represented by the American Medical Association (AMA) and the National Medical Association (NMA), whose members are doctors of medicine and hold the M.D. degree.

Allopathy is the treatment of disease by remedies that produce effects different from or opposite to those produced by the disease; that is, opposed to homeopathy.

Homeopathic medicine was developed in the early nineteenth century based on theories propounded by the German physician, Samuel Hahnemann.

Homeopathy is a system of medical treatment based on the theory that certain diseases can be cured by giving very small doses of drugs which in a healthy person and in large doses would produce symptoms like those of the disease.

Homeopathy is no longer practiced to any extent, and the medical schools that were developed to teach this theory of medical practice have either been closed or converted to the teaching of allopathic medicine.

Osteopathic medicine, which was also developed in the nineteenth century, is based on theories that are not opposed to but are supplementary to allopathic medicine. Osteopathy is widely practiced in the United States and several other countries; its colleges are increasing in number, and the number of practitioners has been expanding.

Osteopathy is a system of medical practice based on the theory that diseases are due chiefly to a loss of structural integrity in the tissues and that this integrity can be restored by manipulation of the parts supported by the use of medicines, surgery, proper diet and other therapy.

An osteopathic physician, known as a doctor of osteopathy (D.O.), is taught to diagnose, prescribe remedies, and treat diseases of the human body. In his education and in his method of treatment, he places emphasis on the relationship between the musculoskeletal structure and organ function of the body. The use of manipulative therapy in diagnosis and treatment is an integral part of osteopathy. In most other respects, the education for and the practice of allopathic and osteopathic medicine are similar.

On the other hand, *chiropractic* is not generally identified as a form of medicine. The *Occupational Outlook Handbook* of the United States Department of Labor provides the following description:

Chiropractic is a system of treatment based on the principle that a person's health is determined largely by the nervous system, and that interference with this system impairs normal functions and lowers resistance to disease. Chiropractors treat patients primarily by manual manipulation of parts of the body, especially the spinal column.

The practice of chiropractic relies on water, light and heat therapy, and prescribed diet, exercise, and rest; it does not include the use of drugs and surgery. Chiropractic should not be confused with osteopathy, nor with chiropody or podiatry (described in the latter part of this chapter).

HISTORY OF OSTEOPATHIC MEDICINE

Compared to optometry, the history of osteopathy is relatively short and simple to report. A nineteenth century physician who had served in a medical capacity during the Civil War was stimulated by the conditions that he encountered to explore and develop an approach to the treatment of disease and injury different from that which was generally practiced at that time. Dissatisfied with the rather primitive and limited armamentarium of drugs and surgical techniques, which relied on massive doses of potent drugs and narcotics for almost every illness, Andrew Taylor Still began an extensive study of the muscular and skeletal systems. He approached various colleges and medical schools with his theories and was rebuffed by them. Finally, he decided to establish a new medical school and did so in 1892 at Kirksville, Missouri, with an enrollment of 18 students.

With the establishment of the Kirksville College of Osteopathic Medicine, the profession of osteopathy commenced. From that small beginning and over the opposition of other medical practitioners, the practice of osteopathy expanded to over 14,000 members licensed to practice in every state, 75 percent of whom are in general practice.

SCOPE OF OSTEOPATHIC PRACTICE

The scope of practice of doctors of medicine and doctors of osteopathy are the same. They are each granted unlimited license to practice medicine. They conduct their practices in the same types of settings: offices, hospitals, clinics, and group practice. The difference between the two professions rests primarily in the emphasis originally and still placed by osteopathy on the following principles: (1) the human body is a unit and an integrated organism in which no part functions independently; (2) through a complex system of internal checks and balances, the body tends to be self-regulating and self-healing in the face of stress and disease; and (3) adequate function of all body organs and systems depends on the integrating forces of the nervous and circulatory systems.

The American Osteopathic Association has further stated:

The fundamental contribution of the osteopathic profession, based on the above principles, is the recognition that the body's musculoskeletal system (bones, joints, connective tissues, skeletal muscles, and tendons) plays an important role in the body's continuous effort to resist and overcome illness and disease.

The basic principles of osteopathic practice were identified in a statement, *Basic Philosophy of Osteopathy and the Contribution of the Osteopathic Profession to Health Care*, issued by the American Osteopathic Association in 1963. The principles state -

1. that the human body is a unit in which structure and function are mutually and reciprocally interdependent;
2. that the body, through a complex equilibrial system, tends to be self-regulatory and self-healing in the face of disease processes;
3. that adequate function of body systems depends upon the unimpeded flow of blood and nerve impulses;
4. that the musculoskeletal system comprises one of the several body systems, and that its importance far exceeds that of providing framework and support; and
5. that there are somatic components to disease which are not only manifestations of the disease, but are important contributing and/or maintaining factors. These somatic components may be local or distant. Appropriate treatment of them has great value.

EDUCATIONAL REQUIREMENTS FOR THE DEGREE OF DOCTOR OF OSTEOPATHY

Following a minimum of three years of undergraduate collegiate education, the undergraduate osteopathic medical education program is four years in length. Although the academic course requirements for admission to the colleges of osteopathy do vary somewhat, they generally specify basic courses in English and physics, and basic and advanced courses in biology and chemistry. In some cases, courses such as psychology may also be required.

As in many other health professions, the competition for admission to the seven colleges of osteopathy has been increasing in recent years. (The eighth and ninth, located in Tulsa, Oklahoma, and Lewisburg, West Virginia, respectively, admitted their first classes in the fall of 1974.) For example, in 1973 there were 884 new and special students admitted to study osteopathy from a total of 10,910 applications. (It should be noted that many students filed applications to more than one college of osteopathy.) Selection of candidates was based on academic records, personal qualities and scores on the Medical College Admissions Tests. Approximately 80 percent of the admitted students had obtained baccalaureate degrees before matriculation, and ten percent had advanced degrees.

With the exception of the emphasis on the musculoskeletal structure of the body and manipulative therapy, the curricula of the colleges of osteopathic medicine and the colleges of allopathic medicine include the same fields of study: biochemistry, clinical and laboratory diagnosis, human anatomy, medicine, microbiology, obstetrics and gynecology, pathology, pediatrics, pharmacology, physical diagnosis, physiology, preventive medicine, psychiatry, public health, radiology, and surgery, as well as medical ethics and legal medicine. Naturally, the colleges of osteopathic medicine also offer required courses in the history, basic theory and practice of osteopathy.

OTHER EDUCATIONAL OFFERINGS

As part of its educational program, each college of osteopathic medicine operates one or more outpatient clinics. In addition, six of the colleges operate one or more teaching hospitals, and all are affiliated with other osteopathic hospitals.

All graduates are required to complete an internship, usually a one-year rotating internship with primary emphasis on medicine, obstetrics-gynecology, and surgery. Following their internships about 50 percent of the graduates enter residency programs. In addition to the more than 60 osteopathic hospitals that provide internships and/or residencies, many hospitals, approved by the American Medical Association, are now offering similar appointments to graduates of osteopathic colleges.

The undergraduate, internship, and residency educational programs have been in existence and have been accepted procedure for some time. More recently, the profession of osteopathic medicine has inaugurated an extensive program in continuing education. In this, the colleges, the specialty societies, the state associations, and the American Osteopathic Association are extensively involved, and all practicing osteopathic physicians are expected to participate.

COLLEGES OF OSTEOPATHIC MEDICINE

As previously noted, there are seven fully operational colleges of osteopathic medicine in the United States, and two new colleges admitted their first classes in the fall of 1974. Table I-6 identifies them and provides brief additional information. All are independent with the exception of the college at Michigan State University to which more extensive reference is made in Chapter V.

TABLE 1-6
COLLEGES OF OSTEOPATHIC MEDICINE

NAME OF INSTITUTION	LOCATION	YEAR FOUNDED	ENROLLMENT 1974-75 ENTERING CLASS	ANNUAL TUITION 1974	
				RESIDENT	NON-RESIDENT
Chicago College of Osteopathic Medicine	Chicago, IL	1900	98	\$2,500	\$2,500
College of Osteopathic Medicine & Surgery	Des Moines, IA	1898	175	2,995	2,995
Greenbrier College of Osteopathic Medicine	Lewisburg, WV	1972	36	3,000	3,800
Kansas City College of Osteopathic Medicine	Kansas City, MO	1916	152	3,250	3,250
Kirkville College of Osteopathic Medicine	Kirkville, MO	1892	128	2,500 ^a	2,500 ^a
College of Osteopathic Medicine - Michigan State University	E. Lansing, MI	1964	88	855 ^b 912 ^c	1,938 ^b 1,995 ^c
Oklahoma College of Osteopathic Medicine & Surgery	Tulsa, OK	1972	36	1,050 ^d	2,400 ^d
Philadelphia College of Osteopathic Medicine	Philadelphia, PA	1898	200	1,598 ^a	1,948 ^a
Texas College of Osteopathic Medicine	Ft. Worth, TX	1966	61	2,000	2,500

^a 1973 annual tuition.

^b First year tuition based on completion of three quarters per year.

^c Second, third and fourth year tuition based on completion of three quarters per year.

^d Tuition based on completion of three trimesters per year.

Members of the profession have been making studies and exploring the means of creating additional colleges of osteopathic medicine in other sections of the country. In Chapter VIII the immediate past and current steps to establish a college in New England are recounted.

REQUIREMENTS FOR PRACTICE OF OSTEOPATHIC MEDICINE

To be eligible to practice osteopathic medicine one must be licensed in the state in which one wishes to practice. The requirements for licensure generally include graduation from an approved college of osteopathic medicine, attainment of age 21, possession of good moral character, successful completion of state board examinations or those administered by the National Board of Examiners for Osteopathic Physicians and Surgeons, and, in some states, the completion of a one-year internship (see Table I-7 for more details).

Periodic relicensure is now required in almost all states, a dozen or more of which mandate participation in approved continuing education programs before the physician may be granted relicensure. Furthermore, continued membership in the American Osteopathic Association is contingent upon enrollment in a minimum of continuing education offerings, as is membership in a growing number of state associations. The national specialty boards are pursuing this same practice.

Even though the great majority of osteopathic physicians engages in general practice, the profession has developed a number of specialties in which a qualified individual may be certified. These include anesthesiology, dermatology, internal medicine, neurology-psychiatry, nuclear medicine, obstetrics-gynecology, ophthalmology-otorhinolaryngology, pathology, pediatrics, proctology, radiology, rehabilitative medicine, and surgery.

To meet the requirements for accreditation by the Committee on Hospital Accreditation of the American Osteopathic Association, a hospital must, among other things, "have a professional staff composed of licensed osteopathic physicians who are members in good standing of their national and divisional associations, and local associations where such exist." Since many of these associations now require participation in continuing education for continued membership, to have hospital privileges, physicians must continually pursue approved educational endeavors.

For osteopathic physicians to supervise the training of interns and residents in hospitals that are approved for such training, the supervisors must also be certified in their specialty. Most of these specialty societies now require continuing education for continued certification.

Considering this rapidly developing and spreading emphasis on continuing education in all of the professions, one may correctly assume that the schools and colleges offering education for the professions are not the only source of continuing education programs. On the other hand, they are the most important elements in the process. For this reason the need for professional schools must be considered not merely for the undergraduate professional education that they provide but also for their leadership in continuing education. Continuing education is now receiving much attention because it is considered to be a first step toward the continued competence expected of professional practitioners.

TABLE 1-7
LICENSURE OF OSTEOPATHIC PHYSICIANS

	CONNECTICUT	MAINE	PASSACHUSETTS	NEW HAMPSHIRE	RHODE ISLAND	VERMONT
SCOPE OF PRACTICE	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
EDUCATIONAL REQUIREMENTS	Graduation from recognized college of osteopathic medicine	Graduation from recognized college of osteopathic medicine	Graduation from recognized college of osteopathic medicine	Graduation from recognized college of osteopathic medicine	Graduation from recognized college of osteopathic medicine	Graduation from recognized college of osteopathic medicine
INTERNSHIP	None	AOA approved	None	1 year at AOA hospital	1 year in hospital or equivalent approved by Board	1 year
BASIC SCIENCE BOARD	None	None	None	None	None	None
LICENSING BOARD	D.O.	D.O.	Composite	M.D.	Composite	D.O.
LICENSING EXAMINATION	National Board exam administered by state board Mar., July, Nov. \$150	Flex plus osteopathic principles and practices June \$125	Flex June, Dec. \$125	Flex June, Dec. \$100	Flex plus osteopathic theory & practice June, Dec. \$150	Flex or state board exam Jan., July \$25
NATIONAL BOARD CERTIFICATE	Accepted \$150	Accepted individually	Accepted at Board's discretion	Accepted	Accepted at Board's discretion \$150	Accepted \$25
RECIPROCITY	Individual basis, 3 yrs. practice or exam-based license \$150	Individual basis with states having equal requirements; may require further examination	Exam-based license from states having equal requirements \$75	Individual basis, exam-based license from states having equal requirements \$100	With states having equal requirements \$150	All states \$25
SPECIAL LICENSES	No temporary permits	Temporary permits: interns, residents, camp physicians \$20	Limited-interns & residents \$5 temporary - 3 mos. for substitution for registered physician \$50	Temporary permits for foreign graduates without full citizenship \$100	Temporary permits interns, residents, hospital officers \$50	No temporary permits \$25
REREGISTRATION	Annual Jan. 31 \$75	Annual Jan. 1 \$125 or less	None	Biennial even-numbered yrs. \$5	Annual Nov. 1 \$5	Annual \$5-residents \$2-non-residents
MANDATORY CONTINUING EDUCATION REQUIREMENT FOR REREGISTRATION	None	50 hrs. per year (40% must be osteopathic)	None	None	None	2 days each calendar year

PODIATRY

DEFINITIONS OF PROFESSIONS PROVIDING FOOT CARE

Medical care of the human foot is provided primarily by two separate professions. One is podiatry, or as it was formerly known - chiropody, and the other is the medical specialty of orthopedic surgery.

Podiatry - The profession of podiatry has described itself in the following terms:

Podiatric medicine is that health service specifically concerned with the examination, diagnosis, treatment, prevention and care of conditions and functions of the human foot by medical and surgical means.

The podiatrist is granted a license to practice medicine on a limited basis in contrast to a doctor of medicine or a doctor of osteopathy who is granted an unlimited license to practice. In the case of the podiatrist the limitations are of two kinds, one that is common to all states and the other that varies among the states. The common limitation specifies that the podiatrist is restricted to the lower extremities of the human body. The other type of limitation, as will be noted later in this chapter of the report, depends on the individual state licensure laws which in some cases authorize surgery and other forms of treatment and in other cases, restrict the podiatrist from undertaking major surgery.

Orthopedics - As indicated earlier, a doctor of medicine or a doctor of osteopathy is granted, in every state, an unlimited license to practice medicine without restriction as to the part of the body that may be treated and without restriction as to the form of treatment, medication or surgery, that may be performed. The doctor of medicine who gives special attention to the functions of bones and joints including those in the foot is the specialist in orthopedics. This specialization is defined by *Webster's Third International Dictionary* as follows:

Orthopedics is that specialty in medical practice that is concerned with preventive and corrective treatment of bones, joints, and other parts of the body engaged in locomotion or movement. It deals with deformities that are present at birth and with those that occur as the result of injury or disease.

As will be described in Chapter II, the relationship between the profession of podiatry and the medical specialty of orthopedic surgery has not always been harmonious.

HISTORY OF PODIATRIC MEDICINE

It can be stated that the profession of podiatric medicine has reached its present status through the efforts of its former and present members to improve their medical services by striving and raising themselves by their own bootstraps. Although there were learned gentlemen who wrote treatises in European publications in the eighteenth and early nineteenth centuries

on the "cause of corns, warts, bunions, and other painful and offensive cutaneous excrescences," chiropody, or podiatry as it is now identified, really had its genesis in the United States in the middle of the past century.

In a manner similar to the traveling medical quack who dispensed nostrums, itinerant "corn doctors" visited mill towns and cities and hailed farmers in the countryside to sell their techniques for the treatment of feet and the removal of corns, bunions, warts, and ingrown toenails. Competing with the corn doctors for this business were barbers, masseurs and shoemakers in an uncontrolled occupation largely unattended by medicine, a profession which gave little attention in the nineteenth century to the importance of feet for the well-being of the patient.

As time passed various individuals involved in treatment of the feet became aware of the need to have some control exercised over the practice of this vocation for the sake of both the public and the more qualified practitioners. The first legislation to control the practice of chiropody was adopted by the New York State legislature in 1895. This legislation was supplanted in 1912 by another act that required licensure under the supervision of the State Board of Medical Examiners. New Jersey adopted a form of regulation in 1908, soon followed by Pennsylvania. During this period, a national association of chiropodists was organized which is known today as the American Podiatry Association.

In any system of regulation and licensure of a vocation or profession, attention is always given to the educational qualifications of the candidates. Podiatry is no exception. The history of the increased educational requirements for podiatric medicine parallels that of the other professions.

Success for the corn doctors depended largely on salesmanship and ballyhoo. The first chiropodists, who followed the earlier stage of corn doctor, were required to undergo apprentice training. Later, chiropodists were expected to engage in some formal training which initially required only that the individual have at least one year of high school and a one-year full-time course in chiropody. The courses were frequently offered in proprietary schools. By the 1920s, requirements had been raised to a high school diploma and a two-year full-time course in chiropody, by which time, independent institutions operated not-for-profit provided much of the education necessary for the future practitioners.

The depression years of the 1930s and the war years of the 1940s adversely influenced the development of the profession. On the other hand, the increased enrollment in the colleges following World War II and the federal grants made available for education in the primary health professions in the 1960s stimulated the growth of podiatry, helped to strengthen its colleges and their educational requirements, and led to the improved quality of practice. The expanded scope of practice in podiatry reflects these factors.

SCOPE OF PODIATRIC PRACTICE

As the population of the nation has increased, as the proportion of older persons has grown, and as greater recognition has been given to the need for health care, the importance of the profession of podiatric medicine

has expanded. Podiatrists now provide preventive treatment, reconstructive services, medical treatment, and prophylactic treatment depending on the needs of the patients. Many types of medical and surgical treatments comparable to those provided by the physician are performed by the podiatrist. Depending on the provisions of the individual state licensure laws, doctors of podiatric medicine may perform surgery under general or local anesthetics, or they may administer drugs, including narcotics, to patients.

In the words of the *Journal of Podiatric Education*:

Podiatrists reconstruct deformed and painful joints of the feet, replace destroyed arthritic joints with prosthetic joint implants, excise painful nerve tumors, perform plastic surgery on painful scars and graft burn cases involving the feet and legs. In essence, the podiatrist provides, in a specialized fashion, those medical and surgical services appropriate to the maintenance of or the reconstruction for a normal functional human foot.

As with the optometrist, it is incumbent upon the doctor of podiatric medicine to refer a patient to the appropriate doctor of medicine or doctor of osteopathy when he recognizes a condition, disease or other abnormality which he is not authorized to treat. To extend the services that a doctor of podiatric medicine now normally provides and also to be prepared to identify foot related diseases and abnormalities such as cancer, diabetes, heart diseases, or stroke, requires of the practitioner a professional education exceeding that available in the colleges of podiatry only a decade or two ago. For these reasons, podiatric professional education has been significantly improved, and postgraduate and continuing education has been extended to serve better the health care needs of the public.

EDUCATIONAL REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PODIATRIC MEDICINE

Podiatric medicine differs from osteopathic medicine in that a minimum of two years, instead of three years, of undergraduate college work is required for admission to a podiatric college. In practice, however, approximately 85 percent of the students who are now being admitted have obtained their baccalaureate degrees. For admission to any of the five colleges of podiatric medicine (a sixth was established with the appointment of a dean and professors in 1975), a student must have completed college courses in biology, chemistry, and physics, plus other subjects, and must have passed the Colleges of Podiatry Admission Test.

The course leading to the degree of Doctor of Podiatric Medicine (D.P.M.) is four years in length and includes both didactic and clinical instruction in such fields as anatomy, biochemistry, general medicine, microbiology, orthopedics, pathology, pharmacology, physiology, podiatric medicine and surgery, and the medical specialties of anesthesiology, dermatology, neurology, and peripheral vascular disease.

The courses in the podiatric medical colleges are taught by faculties composed approximately as follows: doctors of podiatric medicine - 50 percent; doctors of medicine - 20 percent; men and women with doctoral degrees in the

basic sciences - 20 percent; and men and women with degrees in other health professions such as dentistry, nursing, or veterinary medicine - 10 percent. The clinical and didactic podiatric medical courses are taught almost exclusively by doctors of podiatric medicine who have experience in the appropriate podiatric specialty and who have completed postgraduate training programs in specialty areas.

OTHER EDUCATIONAL OFFERINGS

THE *Journal of Podiatric Education* reports that "approximately 50 percent of all graduates from the five colleges of podiatric medicine continue their education by entering one and two-year postgraduate residency training programs," of which over 100 are available. "These programs in most instances are identical in scope and content to internship programs provided to graduates from schools of medicine."

The podiatric resident in a first-year twelve-month residency program is usually rotated through varying hospital departments and/or services of medicine, surgery, orthopedics, general surgery, podiatric surgery, pathology, radiology, emergency room physical medicine, and rehabilitative and podiatric medicine. If the resident is enrolled for a second year, his or her time is usually concentrated in podiatric surgery. In some cases, these latter programs may lead to a degree of Master of Science, although such arrangements are, at present, not common in the field of podiatry.

Since internship programs in podiatry have been available for only a relatively few years, it is fair to state that most practicing podiatrists did not have opportunities for this type of additional, more intensive and broader clinical training. For this reason continuing education is as important to the profession of podiatry as it is to the many other professions that are now stressing the need to maintain professional competence and to increase skills and professional knowledge. In recognition of this need the colleges of podiatric medicine are jointly sponsoring programs of continuing education with the local, state and national podiatry associations. In view of these factors those podiatrists who live and practice in a region in which a podiatric college is situated enjoy a marked advantage.

COLLEGES OF PODIATRIC MEDICINE

As has previously been stated, there are five colleges of podiatric medicine, which are all independent institutions. A sixth has been established as a part of a university academic health center but has not yet matriculated its first class. This college is described more fully in Chapter V.

Table I-8 provides a list of the colleges, their locations and selected information about each. It may be observed that no college of podiatric medicine is located in New England. In previous years several did exist for short periods of time; these will be identified in Chapter VIII.

TABLE I-8
COLLEGES OF PODIATRIC MEDICINE

NAME OF INSTITUTION	LOCATION	YEAR FOUNDED	ENROLLMENT ENTERING CLASS	1974-75	
				TOTAL	ANNUAL TUITION 1974-75 RESIDENT NON-RESIDENT
California College of Podiatric Medicine	San Francisco, CA	1914	89	305	\$3,000 ^a \$3,000 ^a
Illinois College of Podiatric Medicine	Chicago, IL	1912	163	490	3,000 3,000
New York College of Podiatric Medicine	New York, NY	1911	68	241	3,000 3,000
Ohio College of Podiatric Medicine	Cleveland, OH	1916	125	469	2,600 ^b 2,600 ^b 2,400 ^c 2,400 ^c
Pennsylvania College of Podiatric Medicine	Philadelphia, PA	1960	116	332	2,450 2,750

^a Tuition based on completion of three quarters per year.

^b Annual Tuition for first, second, third years.

^c Annual Tuition for fourth year.

REQUIREMENTS FOR PRACTICE OF PODIATRIC MEDICINE

The basic requirement for eligibility to practice podiatric medicine is licensure by the state in which one wishes to practice. As with the professions previously described, requirements generally include qualifications of minimum age, good moral character, graduation from an approved college of podiatric medicine, and satisfactory completion of state or national board examinations. Several states, of which Rhode Island is one, stipulate completion of an internship as an additional requirement (see Table I-9).

Since most doctors of podiatric medicine have conducted their practice from an office, they have, until more recently, been little affected by the additional requirements that are often associated with hospital privileges and practice in hospitals. However, in recent years, conditions for the practice of podiatry have been changing rapidly, including the availability of privileges at many hospitals.

The standards issued in December 1970 by the Joint Commission on Accreditation of Hospitals included the following provision: "The governing body of the hospital, after considering the recommendations of the medical staff, may grant clinical privileges to qualified, licensed podiatrists in accordance with their training, experience and demonstrated competence and judgement."

One of the ways by which qualified health practitioners are further identified is through recognition by specialty boards in the particular areas in which the individual is especially qualified. At present, there are several fields of podiatric practice in which national specialty organizations have been created and affiliated with the American Podiatry Association (APA). These are all limited to concern with the foot and include dermatology, orthopedics, radiology, and surgery. None has actually launched certification procedures to give formal recognition to those who have proven competence in the specialty fields, but the APA and its affiliated organizations are seriously considering the adoption and introduction of such form of recognition and the requirements by which qualified practitioners may be granted board certification.

As previously stated, all vibrant professions are continually undergoing change and development. Such is obviously the situation with optometry, osteopathy and podiatry.

TABLE 1-9
LICENSURE OF PODIATRISTS

	CONNECTICUT	MAINE	MASSACHUSETTS	NEW HAMPSHIRE	RHODE ISLAND	VERMONT
SCOPE OF PRACTICE						
Anatomical Definition	Human foot	Human foot	Human foot	Human foot	Pedal extremity of human body and its articulations, including tendons and muscles of lower leg only as they shall be involved in condition of foot	Human foot
Extent of Surgical Procedures	Minor surgery on all structures of foot forward of tarsal bones, bones of tarsus only with administration of anesthetic other than local	Minor surgery	No restrictions except for amputation of foot or toe	Surgery on soft tissue not beyond deep fascia except removal of exostoses of toes	Minor surgery	Minor surgery
Use of Drugs	All, except those designated "Class A" under federal narcotics law	Local anesthetics; may be licensed by Bureau of Narcotics to prescribe same	Unlimited within scope of license, narcotics included	Local anesthetics and medicinal effect, oral administration of narcotics, hypnotics, vitamins	Local anesthetics only	Local anesthetics only
EDUCATIONAL REQUIREMENTS	2 yrs. college pre-podiatry program, graduation from recognized school of podiatry	1 yr. college, graduation from recognized school of podiatry	Graduation from recognized school of podiatry	Graduation from recognized school of podiatry	1 yr. college, graduation from recognized school of podiatry	2 yrs. college, graduation from recognized school of podiatry
INTERNSHIP REQUIREMENT	None	None	None	None	One academic year in affiliated clinic of recognized school of podiatry	None
COMPOSITION OF EXAMINING BOARDS	5 DPMs having practiced minimum 3 yrs.; appointed by governor for 5-yr. terms	Chairman, Secretary - Treasurer of Board of Registration in Medicine; 2 members of Board of Registration in Medicine; 2 DPMs having practiced minimum 2 yrs. appointed by governor for 4-yr. terms	1 MD, 3 DPMs having practiced 7 yrs., and 1 public member; appointed by governor for 5-yr. terms	Secretary of State Board of Medical Examiners serves as secretary-treasurer 1 MD, 3 DPMs having practiced 5 yrs. minimum; appointed by governor for 3-year terms	3 DPMs appointed by Director of Health for 3-yr. terms with governor's approval constitute examining board; Division of Professional Regulation is licensing body	1 DPM appointed by governor for 2-yr. term; 7 MD members of Board of Medical Registration appointed for 6-yr. terms
NATIONAL BOARD OF PODIATRY EXAMINERS EXAMINATION	Accepted in lieu of State Board exam Fee \$150	Not accepted	Accepted in lieu of written portion of state exam Fee \$150	Not accepted	Not accepted	Not accepted

Continued on next page

TABLE I-9
LICENSURE OF PODIATRISTS (Continued)

	CONNECTICUT	MAINE	MASSACHUSETTS	NEW HAMPSHIRE	RHODE ISLAND	VERMONT
STATE LICENSING EXAM	Fee \$100	Fee \$25	Fee \$50	Fee \$50	Fee \$50	Fee \$75
RECIPROCITY*	Fee \$150 Has endorsement - 5 yrs practice in state when licensed; has not failed Connecticut exam	Fee \$50	Fee \$100 5 yrs. practice in state where licensed; has not failed Mass. exam; intends to reside and practice in Mass.	None	Fee \$50	Fee \$100
CONTINUING EDUCATION REQUIREMENT FOR REREGISTRATION	None	None	None	None	None	None
REREGISTRATION	\$50 each January	\$5 annually	\$10 each December	\$5 each June	\$5 annually	\$5 annually

* Connecticut, Maine, Massachusetts, Rhode Island, Vermont require the following for relicensure.

- (a) that state where applicant is licensed affords similar privilege to podiatrists in state to which application is being made
- (b) that applicant was licensed in accordance with requirements equivalent to those in state in which application is being made.

CHAPTER II

INTER-PROFESSIONAL RELATIONSHIPS

The quality of health care provided to the public is affected, among other factors, by the extent of confidence, cooperation, and respect for each other that prevails among the health professions. In the case of the three professions that are the focus of this study - optometry, osteopathy and podiatry - there has developed a cooperative and understanding relationship among them at the national level. At the local level the individual practitioners of optometry and podiatry, for example, have had little reason for association on a professional basis. Their anatomical areas of interest are at the opposite ends of the body. They have had little occasion to cooperate, or on the other hand, to vie with each other for acceptance and recognition in contrast to optometry, osteopathy and podiatry in their respective relationships with medicine.

In the past, the American Medical Association (AMA) has employed various tactics to hinder or prevent the development of these three health professions. Opposition has been exercised in various ways to prevent passage of state licensure bills, commissioning of members of these professions in the armed services, payments to them under Medicare and Medicaid programs, acceptance by physicians of teaching positions in their separate schools or colleges, inclusion of their schools in universities, cooperation of physicians with these practitioners in the care of patients, and appointments to positions in hospitals, the Veterans Administration, and the U.S. Public Health Service.

The basis for such opposition on the part of organized medicine has been to protect the public from what medicine considered inadequately educated and trained practitioners. The equally important basis, that of economic competition, has seldom been mentioned in public statements.

Fortunately for society and for the future provision of adequate health care to a larger proportion of the public, the relationships between medicine, on the one hand, and the separate professions of optometry, osteopathy and podiatry, on the other hand, have been appreciably improved in recent years. The items of earlier opposition on the part of the AMA noted above are no longer officially opposed. Dialogue and discussions on a national level and in many states and localities are being conducted by representatives of these three separate professions with representatives of the medical profession, although to date in no consistent manner and with uneven results.

The reasons for these improving relationships include a lessened sense of economic competition; improving education and training for members of the professions of optometry, osteopathy and podiatry; increasing importance of governmental regulations in the preparation for and delivery of health care; and the growth in specialization, especially in the profession of medicine.

This last factor has in turn somewhat shifted the locus of strains among the professions so that it is no longer organized medicine as such that endeavors to restrict the development of the three other professions. Rather, it is primarily the medical specialists in ophthalmology who are concerned with and in many ways oppose the optometrists, and in similar ways it is the medical specialists in orthopedic surgery who oppose the podiatrists. Since a very high and growing percentage of doctors of medicine are now specialists, they are collectively less concerned, it would appear, with the doctors of osteopathy who include few specialists and who are generally engaged in practice in less populated areas and locations to which the medical specialists are not attracted.

From what has been written it may be inferred that, with time, organized medicine is flexible and is prepared to alter its policies. This it has done with respect to these three professions. However, in so doing, the AMA faces the conflicting position of ameliorating its relationships with the other professions and at the same time of satisfying the desires of its medical specialties of ophthalmology and orthopedic surgery, which, as other specialties, have their own independent national and state organizations.

Although resolution of the issues among these dynamic professions will never be easy or complete, nevertheless rapid accommodations have been initiated and some improvements in relationships have been accomplished in recent years. Furthermore, the public is now much more concerned with and directly involved in planning for the delivery of health care, and it will insist on full utilization of trained personnel in all of the accepted and recognized health professions.

OPTOMETRY - OPHTHALMOLOGY

The issues of primary conflict between optometrists and ophthalmologists have included -

1. the concern of ophthalmologists with the ability and competence of optometrists to detect pathological conditions, and their willingness to refer patients with disease to ophthalmologists;
2. the concern of ophthalmologists with the possible extension of optometrists' practice into medical areas, a concern which has been manifested in their opposition to the use of diagnostic pharmaceutical agents on the part of optometrists;
3. the concern of optometrists with employment of assistants by ophthalmologists to perform functions that the optometrists consider to be their field of practice and for which they are especially trained;
4. the concern of optometrists with the reluctance of ophthalmologists to recognize and accept optometry as a profession, not of equal education and training, but of equal stature; and
5. the concern of both ophthalmologists and optometrists with their respective competitive economic positions.

These issues are fortunately now being discussed by representatives of the two professions at the national, state, and local levels. To assist in furthering these discussions, the American Optometric Association issued a publication in 1972 entitled, *Guidelines for Improving Relations Between Optometry and Ophthalmology*. The following statement was included in this constructive document:

The two professions of ophthalmology and optometry are unique in their areas of specialized training but symbiotic in their relationships of delivering vision care to the public.

The optometrist receives the highest level of training available in the world in the areas of physiological optics, ophthalmic optics, and the various examination procedures necessary for prescribing ophthalmic lenses, contact lenses, low vision aids, and various aspects of orthoptics. He also receives a basic fundamental training in recognition and detection of ocular disease.

The ophthalmologist receives the highest level of training available in the world in areas of ocular surgery, ocular disease and trauma, and treatment of ocular problems with medication. He also receives some basic training in physiological optics, ophthalmic optics, and refractive procedures.

Working together as unique, independent, but cooperating professions, ophthalmology and optometry provide the highest possible level of quality vision care. The rapid, unbiased referral of both functional and organic vision disorders to the most capable specialist depends on the state of optometry-ophthalmology relationships, as does the employment of every optometrist and ophthalmologist at his highest level of training; the consequent most efficient use of vision care manpower to serve the American public; and the benefit of cross-professional learning, whether in functional vision or pathology.

The disciplines are not the same, as that would connote equivalent training. The training is different, the training emphasis is different, and the specialized skills are different. The disciplines are, and should be, independent professions within the health care complex.

In addition to direct discussions between representatives of optometry and of ophthalmology, other groups have initiated consideration of issues that involve the two disciplines. Among these groups is the Association of Academic Health Centers which is developing a statement that would: identify both optometry and ophthalmology as primary entry points into the fields of eye and vision care; declare that each should exist as an independent and cooperative health care profession; and declare that the optimal educational environment for schools of optometry is within an academic health center. Among the reasons for this last point is that the presence of

schools of optometry in centers with schools of medicine is considered likely to aid in the development and inculcation of behavior patterns of future practitioners which will increase understanding and cooperation among ophthalmologists and optometrists. Also, some individuals hope that the creation of the National Eye Institute of the National Institutes of Health will indirectly encourage cooperation between these two professions.

OSTEOPATHIC MEDICINE - ALLOPATHIC MEDICINE

One of the problems that exists in the profession of medicine relates to the fact that the distinction between the doctor of allopathic medicine (M.D.) - or, as some identify it, human or scientific medicine - and the doctor of osteopathic medicine (D.O.) has been narrowed so that at the present time there is actually little difference between them. The disparity in the quality of education and training that may have existed in previous years apparently has diminished to relative unimportance, and the education now provided for and required of each type of physician is similar. Furthermore, although the percentage of specialists among M.D.'s and D.O.'s is in marked contrast, their general methods of practice follow similar patterns.

These and other economic and political factors have led to a change in policy on the part of the AMA from that of hostility and an attempt at suppression to one of acceptance. Acceptance has been followed by implementation of cooperative developments based on hesitant and still somewhat suspicious understanding on the part of each group.

A number of accredited hospitals are now appointing osteopathic physicians to their medical staffs. Osteopathic physicians are eligible for active membership in county and state medical societies, as well as for membership in the American Medical Association itself. Some of the American boards for medical specialties are accepting "for examination for certification those osteopaths who have completed AMA-approved internships and residency programs and have met other regular requirements applicable to all Board candidates." And, since 1969, any qualified graduate of a school of osteopathy has been eligible to be appointed to a hospital internship approved by the AMA.

Although gratified by the AMA's formal recognition of the competence of osteopathic physicians, the profession of osteopathic medicine has been wary of acceding too readily to these overtures by allopathic medicine. There is a basic point of difference between the two national organizations. The American Medical Association appears to be acting on the assumption that eventually there should be only one profession of medicine, and the American Osteopathic Association reacts on the conviction that there is a place for both organizations and that the public will gain by being provided a choice between two medical professions - one that has gone the route of specialization and the other that has continued to emphasize general practice with emphasis on the role of the neuromusculoskeletal system and that gives special attention to providing health care in rural and less populated regions of the country.

A reconciliation of these two points of view will not be easy, but at least representatives of osteopathic medicine and allopathic medicine are talking to each other. Whatever develops in the future, the public will exert more influence in the decisions than would have been the case in the past.

PODIATRIC MEDICINE - ORTHOPEDIC SURGERY

In a manner similar to its change in policies toward optometry and osteopathy, organized medicine has altered its attitude toward podiatry to one of acceptance and recognition. Podiatry is now officially recognized by the American Medical Association as a scientifically based allied health profession that conducts its practice in a specifically limited anatomical area.

This formal acceptance by the AMA apparently has not, however, fully satisfied many of the medical specialists in orthopedic surgery who continue to question the competence of podiatrists and who without publicly so stating object to their economic competition. For their part, the podiatrists look on orthopedic surgeons with suspicion and skepticism particularly when the latter without prior consultation propose, as they did in 1974, that studies be made of the schools of podiatry by non-podiatrists.

In 1960, a thorough analysis of the education and training provided to podiatric students was initiated and sponsored by the American Podiatry Association and conducted by non-podiatrists. Many weaknesses in the educational programs of the schools of podiatric medicine were identified and corresponding suggestions for improvement were presented publicly in the final report. In the 15 years that have elapsed since the completion of that study, the colleges have been strengthened appreciably, new buildings and equipment have been acquired by all colleges, the quality of both faculty and students has been improved, and the number of applicants for the limited number of places has multiplied.

The formal discussions that have taken place intermittently between representatives of the medical profession and the podiatric profession are again being resumed at the national level. Similar dialogue is needed at the state and local levels so that better understanding will result between the two groups including, especially, the orthopedic specialists. Such dialogues will not be conducted without strains, but they will in time lead to improved cooperation in practice and further improvement in the delivery of good foot health care to the American public.

OBSERVATIONS REGARDING INTER-PROFESSIONAL RELATIONSHIPS

During the course of this project, it has become obvious that provision of good health care would be enhanced if the following principles were accepted and pursued equally by the health professions.

1. The professions of optometry, osteopathy and podiatry, as well as the profession of medicine with its specialties of ophthalmology and orthopedic surgery, are legally licensed

and recognized professions, and each contributes to the welfare of society by performing its services in its identified manner of practice.

2. If the professions would develop greater understanding and sympathy for the contributions that each of the other professions can and do provide in the delivery of good health care, they could more effectively cooperate for the greater benefit to the general public. Furthermore, with the participation and assistance of competent persons who are not members of any of these professions, representatives of the professions could at regular periodic intervals jointly review their respective areas of practice to the end that their professional services would complement each other and only incidentally conflict with each other.

CHAPTER III

OPTOMETRIC, OSTEOPATHIC AND PODIATRIC MANPOWER IN NEW ENGLAND

Despite numerous and varied attempts to define demand for health care services, no widely accepted method of actually defining such demand has been devised and adopted. Economists, sociologists, health care administrators and planners all advocate various approaches. However, no matter what approach is pursued, the variables are so numerous that a conclusive result is not attainable.

The question of demand for eye care alone raises issues about the extent of services provided by optometrists, as well as by ophthalmologists, opticians, and their paraprofessional assistants. In addition, some licensed physicians who do not specialize in eye care do administer eye examinations or provide some other forms of eye care services, to an extent that is not known.

Less complicated but similar factors prevail when one attempts to estimate the demand in New England for care by allopathic physicians and by osteopathic physicians, or the demand for care by doctors of podiatric medicine and physicians who specialize in orthopedic surgery, as well as the demand met by the general practitioner who provides, incidentally, some care for the foot.

Unfortunately, no adequate study for the purposes of this project is available that predicts the future demand of health care services in New England for optometrists, osteopathic physicians or podiatrists. Consequently, it is necessary to rely on the distribution of manpower personnel as publicly reported, to relate it to the present and projected population of each of the New England states, and to anticipate that there will probably be an increase in demand following the expected adoption and implementation of a program of national health insurance.

The following analyses of optometry, osteopathy and podiatry, each supported by charts and tables, demonstrate that the manpower for each of these three professions in the New England region is rapidly approaching retirement age. In fact, the average age of the practitioners in each of the professions is such that at present the younger persons entering the professions are not doing so at a rate sufficient to replace the older men and women who are leaving or who soon will be withdrawing from practice and the labor force in larger numbers.

OPTOMETRY

The source of the following data on optometric manpower is the preliminary findings of the Optometric Manpower Resources Project (OMRP), a survey undertaken late in 1972 and in 1973 throughout the United States by the International Association of Boards of Examiners in Optometry and the Health Resources Administration of the U.S. Department of Health, Education and Welfare. The survey was conducted during the reregistration of

optometrists with their state licensing boards, and will be referred to in this report as the OMRP survey. Briefly, the preliminary survey data reveal the following characteristics of the New England optometric manpower situation:

1. In 1973 there were 1,308 active optometrists in New England serving an estimated population of 12,151,000. The ratio of population per active optometrist was 9,290 to 1 in New England, compared to the overall United States ratio of 11,890 to 1. In New England, the ratio of population per M.D. ophthalmologist, not federally employed, was 18,750 to 1 in 1973.
2. Three counties in New England were not reported as having an optometric practice.
3. Fewer than two percent of the active optometrists in New England in 1973 were women.
4. Nearly three-quarters of New England's active optometrists were solo practitioners.
5. The median age (the point at which exactly 50 percent are older) of the active optometrists in New England in 1973 was 48.8 years, compared to the median age of 47.4 years for the active optometrists in the entire United States.
6. During the next 15 years, a substantial proportion of New England's currently active optometrists can be expected to withdraw from practice as a result of retirement or death, while the region's population will continue to increase. Only a continuous input of new optometric graduates into the region will offset the loss of optometric services caused by the anticipated attrition.

The preliminary findings of the OMRP survey have been separately published for each state and for the District of Columbia. The overall survey response rate for the preliminary findings is approximately 92 percent; the lowest response rate for a state is 73 percent and the highest is 100 percent. The response rate for New England is slightly higher than 92 percent. The national total number of optometrists reported in the following tables will thus be slightly less than totals that have been reported in other studies, because the preliminary data available at the time of this writing were not adjusted for the non-response rate. However, most of the figures discussed in this report are used for comparisons and for determining proportions; the non-response rate, which should be considered a constant throughout the data, will have little or no effect upon this use of the data.

Most of the statistics reported in this section refer to "active optometrists" defined by the OMRP as those currently in patient care (optometric practice), teaching, research, and administration. This classification is distinguished from the survey category "total optometrists" in that "active optometrists" does not include those holders of the O.D.

degree who are retired, unemployed or active in an altogether different field. Moreover, since each of the areas of activity included in the definition of active optometrists has an influence upon the delivery of vision care, and since these areas are not mutually exclusive (an optometrist who teaches may also provide some patient care), it is thought that "active optometrists" most accurately reflects the status and impact of manpower in the optometric profession.

MANPOWER DATA FOR OPTOMETRY

The available statistics indicate that in New England as a whole the ratios of population per practitioner for optometry and ophthalmology are lower than the corresponding national ratio for each profession, although four individual New England states have higher population per ophthalmologist ratios than the national overall ratio. Fewer than two percent of New England's optometrists are female. The number of female ophthalmologists in New England is not available, but in 1968 the national proportion of female ophthalmologists was 2.7 percent.

Table III-1 shows the estimated populations of the New England states and the United States, the numbers of active optometrists according to the OMRP survey, and the numbers of ophthalmologists as reported in the American Medical Association (AMA) publication, *Distribution of Physicians in the United States, 1973*. The ratios of population per practitioner are provided for purposes of comparisons between the states and the United States total within each profession; this presentation is not intended to make a comparison of optometry and the medical specialty of ophthalmology. The use of simple ratios of practitioner per population as a measure of manpower needs is necessarily limited because not one but a number of different factors determine the adequacy of the availability of health care in any given geographical area.

In the case of optometry, the overall ratio of population per active practitioner in the United States is 11,890 to 1. All of the New England states, except Connecticut, have a ratio that is better (i.e., lower) than the United States ratio, although the New Hampshire ratio may not be significantly different from that of the United States. Previous studies have also shown most of the New England states' ratios to be better than the United States average ratio and none to be in the worst quartile of a ratio rank-order. The New England population per optometrist ratio of 9,290 to 1 is substantially lower than the United States ratio.

The ratio of population per ophthalmologist in the New England region is also better (lower) than the overall United States ratio, but this is primarily because of the high number of ophthalmologists in Massachusetts. Over half of the ophthalmologists in New England are located in this one state, and the ratio of population per ophthalmologist in Massachusetts is one of the lowest in the country. However, four New England states have ratios higher than the overall United States ratio.

It should be emphasized that the ophthalmologists reported in Table III-1 represent all non-federally employed M.D.'s whose specialty is the delivery of vision care. As described in Chapter I, such a specialist may

be a board-certified ophthalmologist, a non-board-certified ophthalmologist, or a physician formerly classified as an eye, ear, nose and throat (EENT) specialist who now practices more ophthalmology than otolaryngology. The elimination of the specialty category of EENT and the decision of many of the former EENT specialists to be classified as ophthalmologists, resulted in an artificial and occasionally misleading increase in the national total number of "ophthalmologists" within the past 20 years.

A report on 1968 ophthalmologic manpower, issued in December 1972, by the Public Health Service, USDHEW, noted that of the national total of 8,434 M.D. ophthalmologists, 41 percent (3,482) were not board-certified; the proportion of non-board-certified ophthalmologists in New England that year was also 41 percent. The national median age of the non-board-certified ophthalmologists was 53.9 years, which is significantly higher than the median age of 49.6 years for board-certified ophthalmologists. The age difference may be a result of the number of older ophthalmologists who were originally called EENT specialists and who are not board-certified ophthalmologists.

As shown in Table III-2, only 2.1 percent of the active optometrists in the United States are women, and the New England percentage is slightly below that at 1.8 percent. An examination of data by sex and age does not indicate that there are more younger female optometrists than older, which would seem to preclude any significant increase in the percentage in the near future. It is possible that women with the O.D. degree enter and leave active practice at various times in their careers due to family demands. Such a situation might cause fluctuations in the percent of female practitioners in the middle age groups.

Although ratios of population per practitioner do not completely measure health manpower, a comparison of the New England region to the United States reveals that New England is at present relatively well supplied with health professionals who provide eye care. However, as will be discussed later, the supply may be adversely affected by an accelerated withdrawal from practice that is implied in the current age distribution of practitioners of optometry.

TABLE III-1
OPHTHALMOLOGIC AND OPTOMETRIC MANPOWER, 1973

	CT	ME	MA	NH	RI	VT	Total N.E.	Total U.S.
1973 Estimated Population (numbers in 1,000s)	3,076	1,028	5,818	791	973	464	12,151	209,851
Active Optometrists ¹	251	114	711	69	120	43	1,308	17,643
Population per Optometrist	12,250	9,020	8,180	11,460	8,110	10,790	9,290	11,890
Ophthalmologists ²	172	40	348	33	37	18	648	9,946
Population per Ophthalmologist	17,880	25,700	16,720	23,970	26,300	25,780	18,750	21,100

¹See text for definition.

²Non-federal M.D.'s specializing in vision care, including board-certified, non-board-certified, and board eligible EENT specialists (see text). According to the American Osteopathic Association's 1974 directory, there are four D.O.'s in New England for whom ophthalmology is a primary or secondary specialty.

Sources:

Current Population Reports, Series P-25, No. 520, "Population Estimates and Projections: Provisional Estimates of Resident Population of States, July 1, 1973," U.S. Department of Commerce Bureau of the Census (Washington: Government Printing Office, July 1974).

Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

Distribution of Physicians in the United States, 1973 (Chicago: American Medical Association, 1974).

TABLE III-2
MALE AND FEMALE ACTIVE OPTOMETRISTS, 1973

	CT	ME	MA	NH	RI	VT	Total N.E.	Total U.S.
Total Active Optometrists	251	114	711	69	120	43	1,308	17,643
Male	248	112	693	69	120	43	1,285	17,259
Percent	98.8	98.2	97.5	100.0	100.0	100.0	98.2	97.8
Female	3	2	18	0	0	0	23	379
Percent	1.2	1.8	2.5	-	-	-	1.8	2.1
Not Reported	0	0	0	0	0	0	0	5 <0.1

Source: Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

GEOGRAPHICAL DISTRIBUTION OF PRACTITIONERS

Tables III-3a through III-3f list the number of active optometrists in each New England state according to the county in which their primary practice is located. There are only three counties in New England which were not listed as a primary practice location: Nantucket, Massachusetts, and Essex and Grand Isle in Vermont.

Counties with larger populations or larger population centers tend to have more optometrists. Ratios of population per practitioner range from 24,000 per optometrist in Caledonia County, Vermont, to 5,000 per optometrist in Suffolk County, Massachusetts, which includes the city of Boston.

As in Table III-1, the population per optometrist ratios are provided for the purpose of comparing counties within a state or among states. The ratios, based upon population *estimates* for 1973 and on the preliminary results of the OMRP survey conducted in 1972-1973, are approximate and have been rounded to the nearest hundred.

As a measure of manpower, county ratios are not necessarily more accurate or more valid than an overall state ratio. Access to an optometrist is independent of county or state boundaries and is affected by such factors as distance, topography, transportation, travel time and appointment availability. A county which could appear to have too few optometrists *may* have sufficient access to optometric care if some of the conditions listed above are favorable, and vice versa. The difficulties of measuring the adequacy of health manpower have not yet been overcome even on the county level.

TABLE III-3a
DISTRIBUTION OF ACTIVE OPTOMETRISTS IN CONNECTICUT

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Optometrists 1973</u>	<u>Population Per Practitioner</u>
Fairfield	787,800	54	14,600
Hartford	824,200	65	12,700
Litchfield	146,900	13	11,300
Middlesex	121,000	9	13,400
New Haven	756,800	73	10,400
New London	239,800	20	12,000
Tolland	110,900	5	22,200
Windham	88,300	10	8,800
Not Reported		2	
Total	3,076,000	251	12,250

Sources: *Current Population Reports*, Series P-26, No. 79, "Federal-State Cooperative Program for Population Estimates: Estimates of the Population of Connecticut Counties: July 1, 1972 and 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, August 1974).

Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

TABLE III-3b
DISTRIBUTION OF ACTIVE OPTOMETRISTS IN MAINE

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Optometrists 1973</u>	<u>Population Per Practitioner</u>
Androscoggin	93,300	9	10,400
Aroostook	94,800	16	5,900
Cumberland	197,200	23	8,600
Franklin	23,600	1	23,600
Hancock	37,000	5	7,400
Kennebec	98,300	9	10,900
Knox	31,100	5	6,200
Lincoln	21,600	2	10,800
Oxford	44,900	5	9,000
Penobscot	129,600	15	8,600
Piscataquis	16,400	1	16,400
Sagadahoc	24,900	3	8,300
Somerset	41,500	3	13,800
Waldo	25,500	2	12,700
Washington	31,200	4	7,800
York	117,600	11	10,700
Total	1,028,000	114	9,020

Sources: *Current Population Reports*, Series P-26, No. 59, "Federal-State Cooperative Program for Population Estimates: Estimates of the Population of Maine Counties: July 1, 1972 and 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, March 1974).

Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

TABLE III-3c
DISTRIBUTION OF ACTIVE OPTOMETRISTS IN MASSACHUSETTS

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Optometrists 1973</u>	<u>Population Per Practitioner</u>
Barnstable	109,000	15	7,300
Berkshire	148,900	23	6,500
Bristol	461,300	51	9,000
Dukes	6,900	1	6,900
Essex	647,400	82	7,900
Franklin	60,900	6	10,100
Hampden	461,000	44	10,500
Hampshire	134,300	12	11,200
Middlesex	1,421,800	164	8,700
Nantucket	4,200	0	-
Norfolk	614,300	63	9,700
Plymouth	364,700	36	10,100
Suffolk	734,700	148	5,000
Worcester	648,900	66	9,800
Total	5,818,000	711	8,180

Sources: *Current Population Reports*, Series P-26, No. 91, "Federal-State Cooperative Program for Population Estimates: Estimates of the Population of Massachusetts Counties and Metropolitan Areas: July 1, 1972 and 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, October 1974)

Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

TABLE III-3d
DISTRIBUTION OF ACTIVE OPTOMETRISTS IN NEW HAMPSHIRE

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Optometrists 1973</u>	<u>Population Per Practitioner</u>
Belknap	34,800	3	11,600
Carroll	20,800	1	20,800
Cheshire	55,300	3	18,400
Coos	34,000	3	11,300
Grafton	57,900	7	8,300
Hillsborough	237,700	22	10,800
Merrimack	87,400	7	12,500
Rockingham	153,700	12	12,800
Strafford	77,200	5	15,400
Sullivan	31,900	6	5,300
Total	791,000	69	11,460

Sources: *Current Population Reports*, Series P-26, No. 52, "Federal-State Cooperative Program for Population Estimates: Estimates of the Population of New Hampshire Counties and Metropolitan Areas: July 1, 1972 and 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, January 1974).

Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

TABLE III-3e
DISTRIBUTION OF ACTIVE OPTOMETRISTS IN RHODE ISLAND

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Optometrists 1973</u>	<u>Population Per Practitioner</u>
Bristol	46,100	4	11,500
Kent	148,700	15	9,900
Newport	99,700	8	12,500
Providence	586,300	83	7,100
Washington	<u>92,200</u>	<u>10</u>	<u>9,200</u>
Total	973,000	120	8,110

Sources: *Current Population Reports*, Series P-26, No. 65, "Federal-State Cooperative Program for Population Estimates: Estimates of the Population of Rhode Island Counties and Metropolitan Areas: July 1, 1972 and 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, April 1974).

Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

TABLE III-3f
DISTRIBUTION OF ACTIVE OPTOMETRISTS IN VERMONT

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Optometrists 1973</u>	<u>Population Per Practitioner</u>
Addison	24,800	3	8,300
Bennington	28,800	3	9,600
Caledonia	24,000	1	24,000
Chittenden	105,700	7	15,100
Essex	5,700	0	-
Franklin	32,700	4	8,200
Grand Isle	3,900	0	-
Lamoille	14,200	1	14,200
Orange	19,100	1	19,100
Orleans	21,300	3	7,100
Rutland	54,700	5	10,900
Washington	48,300	4	12,100
Windham	35,100	4	8,800
Windsor	46,000	6	7,700
Not Reported		1	
Total	464,000	43	10,790

Sources: *Current Population Reports*, Series P-26, No. 49, "Federal-State Cooperative Program for Population Estimates: Estimates of the Population of Vermont Counties: July 1, 1972 and 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, January 1974).

Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

TYPES OF PRACTICE

According to the OMRP survey, the vast majority of active optometrists in New England (83.6 percent) are self-employed: 72.8 percent are in solo practice, 9.4 percent are in partnership, and 1.4 percent are in group practice. The remaining 11.9 percent (4.5 percent of the total did not report their type of practice) are employed either by an organization or by another health professional. There is little deviation from these proportions among the individual New England states. Table III-4 contains the numbers in each category for each state.

It can be inferred from this data that the present proportions of types of optometric practice are not likely to change in the near future, nor can any changes (for example, to a higher proportion of group practitioners) occur rapidly. It appears, however, that substantially more practitioners in the age groups "under 30" and "30-39" are in partnerships and group practices than are those in the older age groups. Unfortunately, the extent to which this observation represents a trend among new optometry graduates in choosing a type of practice cannot be determined at this time.

TABLE III-4
TYPE OF OPTOMETRIC PRACTICE BY STATE, 1973

	CT	ME	MA	NH	RI	VT	N.E. Total	
Active Optometrists	251	114	711	69	120	43	1,308	100.0%
Self-employed	222	99	574	61	100	38	1,094	83.6%
solo practice	179	91	522	43	79	38	952	72.8
partnership	41	7	44	14	17	0	123	9.4
group practice	2	1	8	4	4	0	19	1.4
Employed by	22	10	98	6	16	3	155	11.9%
Professional corporation	0	4	15	0	4	2	25	1.9
Federal government (Military)	1	2	10	1	7	0	21	1.6
Federal government (Non-military)	0	0	2	0	0	0	2	0.2
State or local government	0	0	1	0	0	0	1	0.1
Other optometrist	5	2	24	3	2	1	37	2.8
Ophthalmologist	2	0	11	0	0	0	13	1.0
Physician	0	0	0	0	0	0	0	-
Firm or manufacturer	3	0	3	0	0	0	6	0.5
Non-profit organization or institution	7	0	30	0	0	0	37	2.8
Multidisciplinary group practice	1	0	2	1	3	0	7	0.5
Other	3	2	0	1	0	0	6	0.5
Not Reported	7	5	39	2	4	2	59	4.5%

Source: Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

AGE DISTRIBUTION OF ACTIVE PRACTITIONERS

The post-World War II surge of optometric graduates accounts for a high proportion (60 percent) of practitioners between the ages of 40 and 59. The median age of New England's active optometrists, or the midpoint at which exactly 50 percent are older, is 48.8 years and is higher than the median age of active optometrists nationwide, a fact which will influence the future supply of optometrists in New England.

Figure III-1 illustrates the dramatic increase in the number of graduates from optometry schools immediately after World War II when colleges operated on an accelerated basis and when many veterans utilized their educational assistance entitlement. Two recent articles in separate issues of the *Journal of the American Optometric Association* reported that other health professions encountered similar increases in their schools' enrollments. After 1951, the number of optometry graduates dropped sharply, almost to pre-war levels, but has been increasing fairly steadily since 1961.

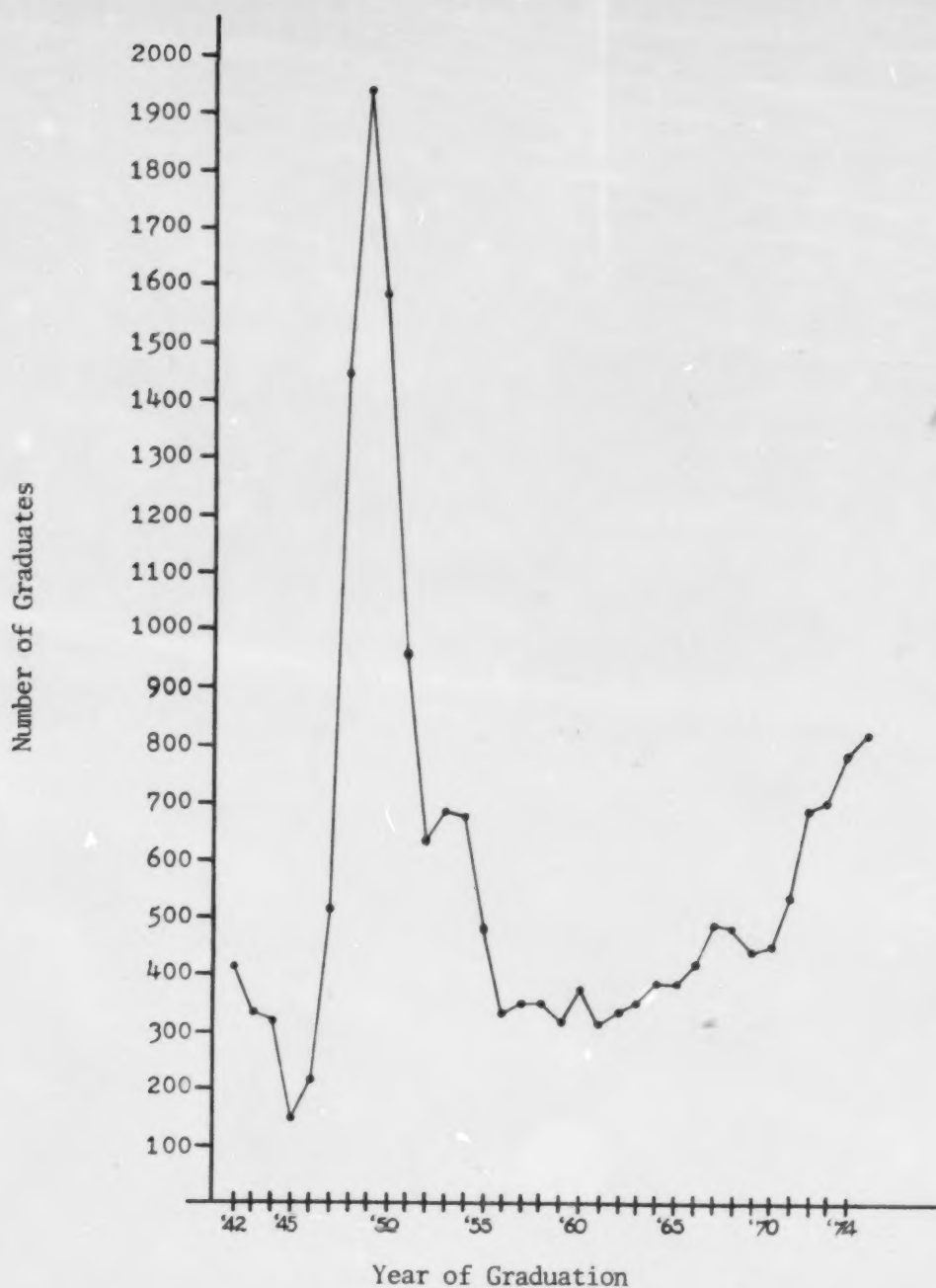
Because of the increased number of graduates, the national ratio of population per optometrist was lowest, and thus most favorable, in 1951 at approximately 7,200 to 1. The ratio has increased since then as the general population has increased at a greater rate than the number of optometrists. In fact the number of registered optometrists actually decreased from about 1958 until 1970.

Figure III-2, which illustrates the age distribution of active optometrists in New England, shows that the graduates of the postwar surge who practice in New England are in the "40-49" and "50-59" age groups. This accounts for a mean, or average, age of about 48 years and a median age of 48.8 years in New England. These figures are slightly higher than the mean and median ages for the United States, 47.1 years and 47.4 years respectively, as presented in Table III-5.

All the New England states except Vermont have similar age distributions, as shown in Figures III-3a and III-3b. Figure III-3a depicts the number of active optometrists in each age group in each state, while Figure III-3b illustrates the age distribution by percent within each state. Vermont has the most even age distribution and the lowest median age, while Maine has the highest median age.

Comparing the New England states to the non-New England states and to the United States total, the data in Figure III-4 indicate that New England has a lower percentage of active practitioners in the three younger age groups and a higher percentage in the three older age groups. This observation is consistent with the higher median age of active practitioners in New England. The implications of the age distribution of active optometrists in New England will be discussed at the conclusion of the optometry section in this chapter.

FIGURE III-1
GRADUATES OF U.S. OPTOMETRY SCHOOLS, 1942 TO 1974



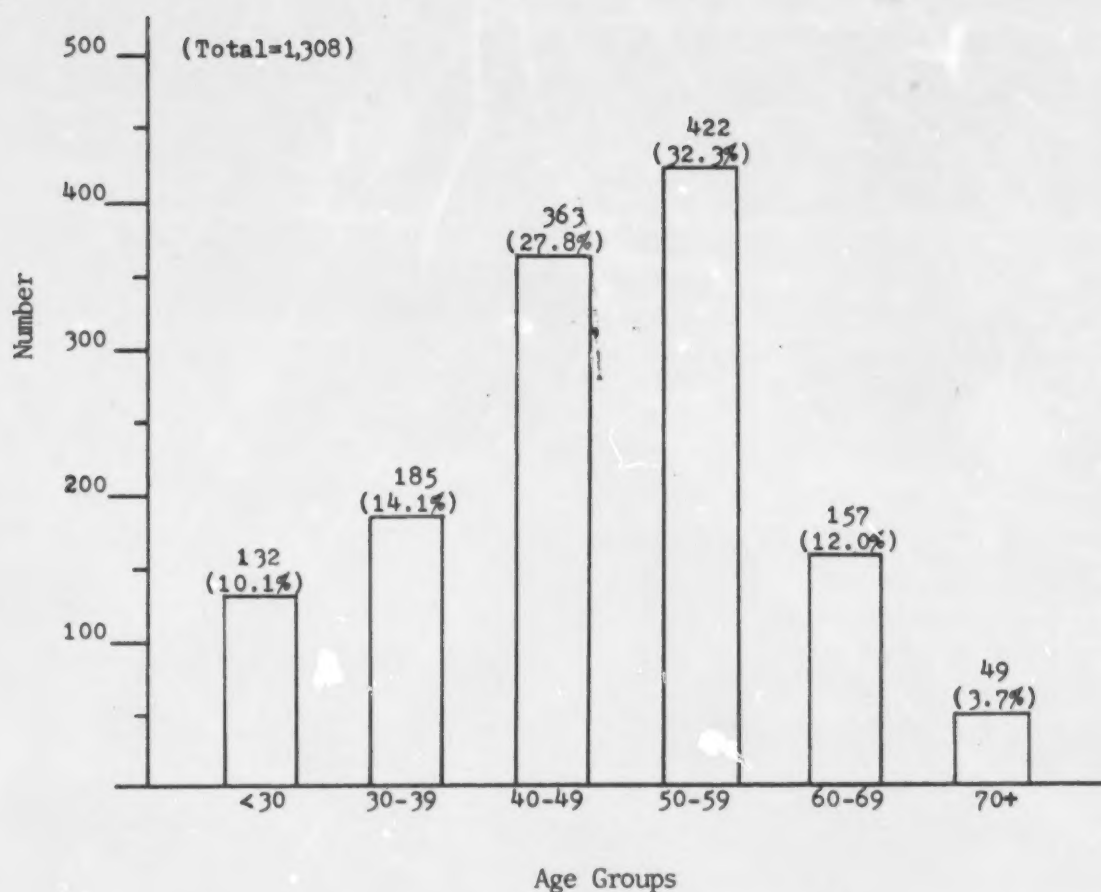
Source: Robert J. Havighurst (study director), *Optometry: Education for the Profession, Report of the National Study of Optometric Education* (Washington, D.C.: National Commission on Accrediting, 1973).

TABLE III-5
ACTIVE OPTOMETRISTS BY AGE AND STATE, 1973

Age	CT	ME	MA	NH	RI	VT	Total N.E.	Total U.S.
Under 30	28	12	66	6	12	8	132	1,908
Percent	11.2	10.5	9.3	8.7	10.0	18.6	10.1	10.8
30-39	38	15	95	10	17	10	185	2,671
Percent	15.1	13.2	13.4	14.5	14.2	23.3	14.1	15.1
40-49	70	26	209	20	29	9	363	5,214
Percent	27.9	22.8	29.4	29.0	24.2	20.9	27.8	29.6
50-59	75	34	239	22	40	12	422	5,332
Percent	29.9	29.8	33.6	31.9	33.3	27.9	32.3	30.2
60-69	36	22	72	9	15	3	157	1,708
Percent	14.3	19.3	10.1	13.0	12.5	7.0	12.0	9.7
70 and over	4	5	30	2	7	1	49	602
Percent	1.6	4.4	4.2	2.9	5.8	2.3	3.7	3.4
Not Reported	0	0	0	0	0	0	0	208
Percent	-	-	-	-	-	-	-	1.2
Total	251	114	711	69	120	43	1,308	17,643
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
MEAN	47.3	49.5	48.2	48.2	48.9	43.7	48.0	47.1
MEDIAN	48.0	50.7	48.8	48.8	50.0	43.4	48.8	47.4

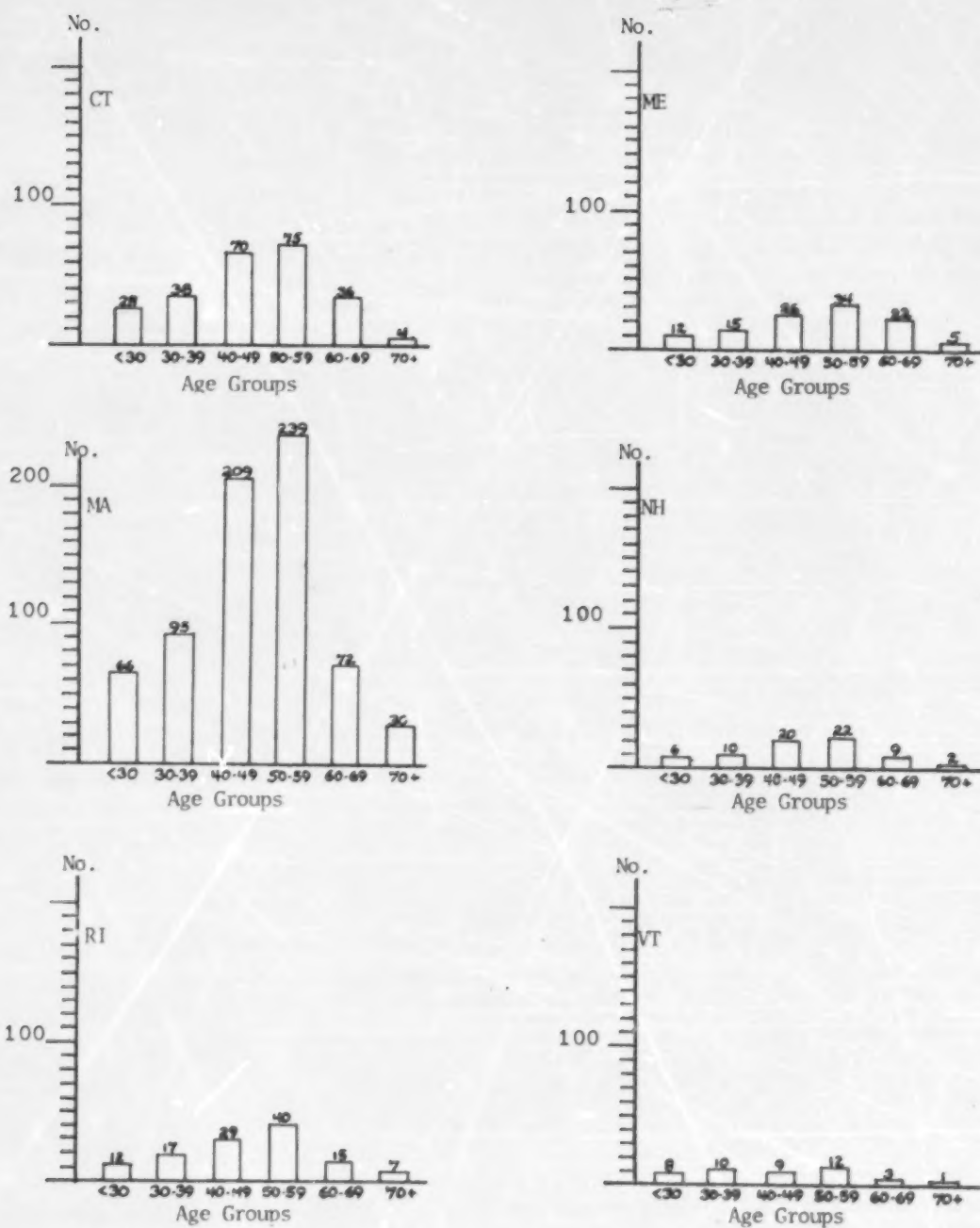
Source: Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

FIGURE III-2
AGE DISTRIBUTION OF ACTIVE OPTOMETRISTS IN NEW ENGLAND, 1973



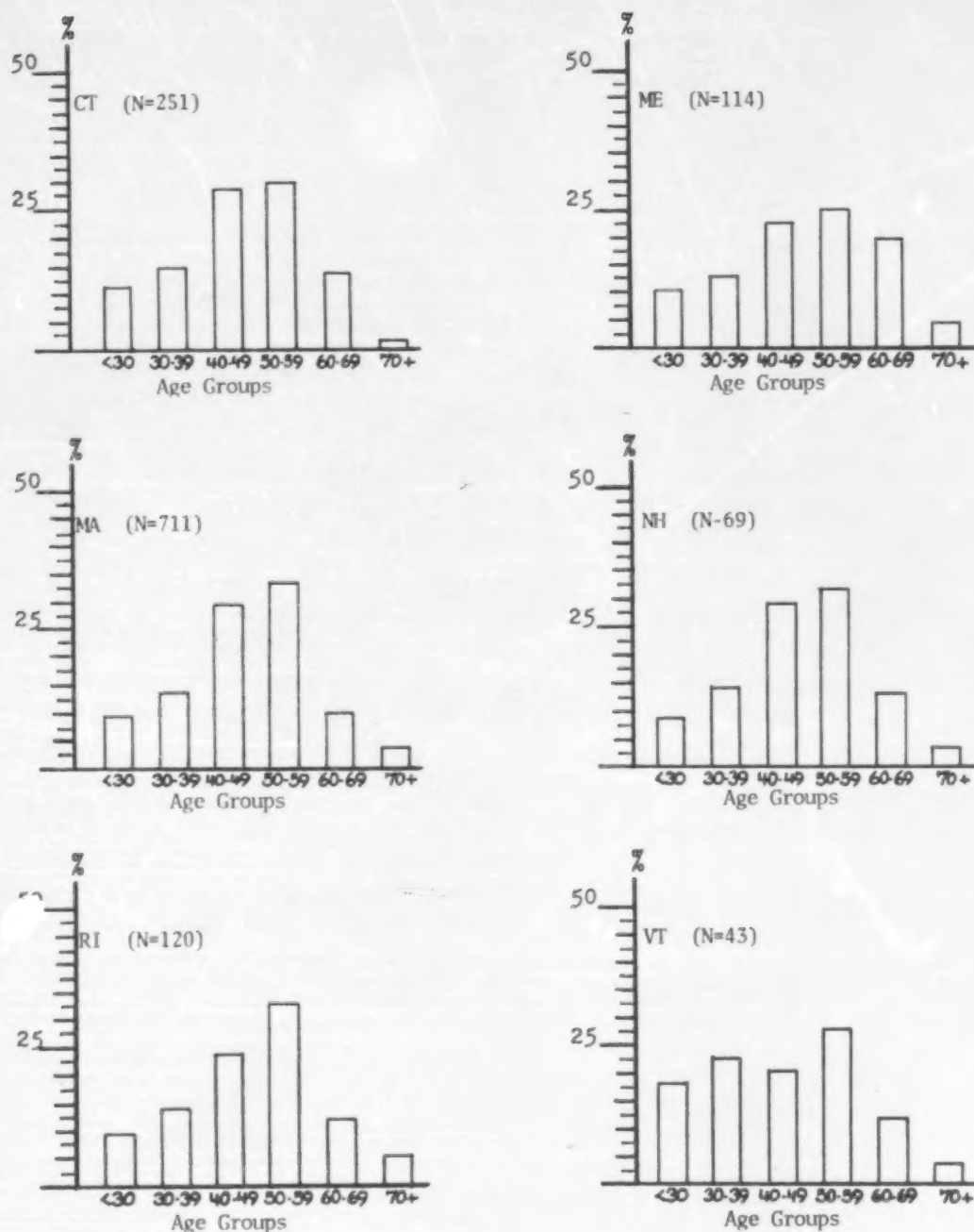
Source: Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

FIGURE III-3a
ACTIVE OPTOMETRISTS BY AGE, NEW ENGLAND STATES, 1973



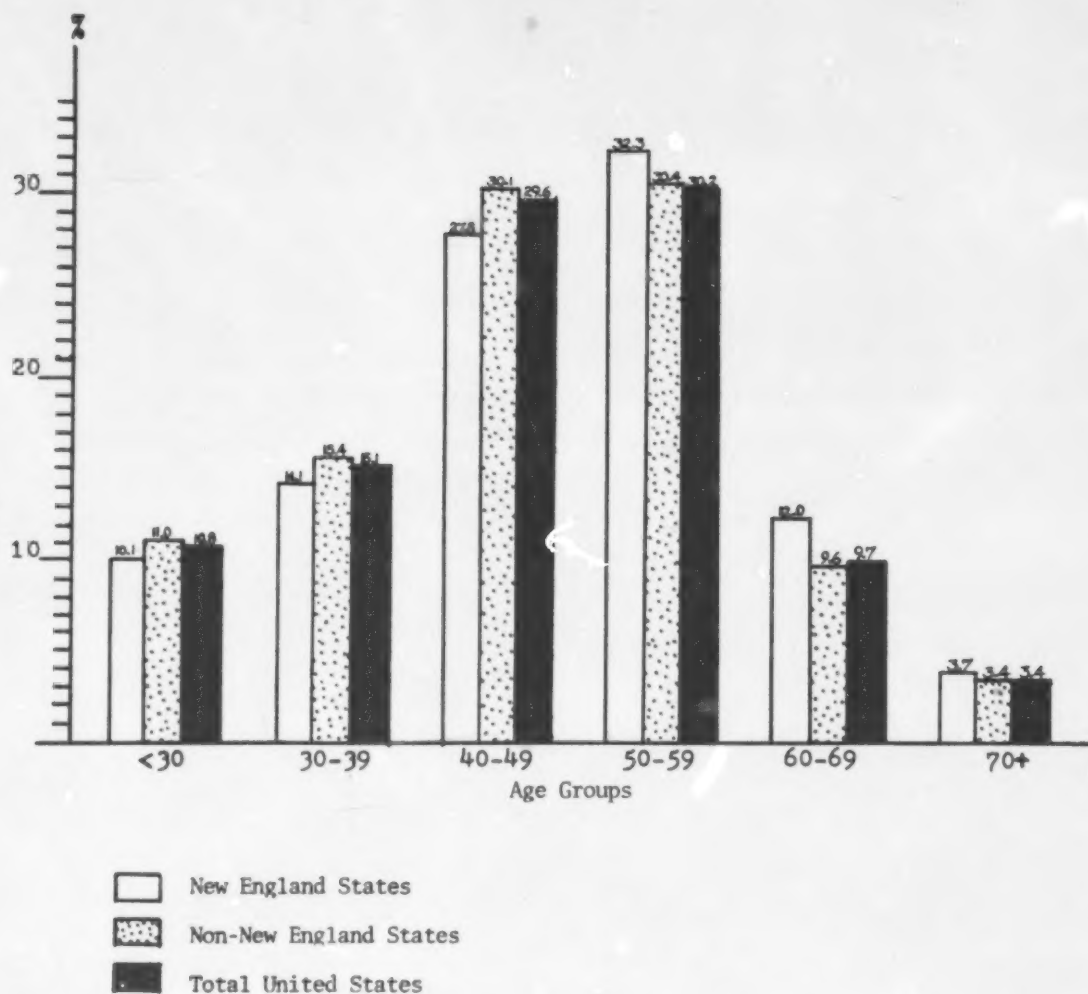
Source: Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

FIGURE III-3b
AGE DISTRIBUTION OF ACTIVE OPTOMETRISTS BY PERCENT,
NEW ENGLAND STATES, 1973



Source: Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

FIGURE III-4
COMPARATIVE AGE DISTRIBUTIONS OF ACTIVE OPTOMETRISTS, 1973



Source: Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

DEMAND FOR VISION CARE

"Demand for vision care" is immutably linked to the assessment of the adequacy of available vision care whether we are dealing with the present or with the future. There are at least three broad factors which influence the analysis of vision care delivery: the professionals who provide the care, the population which needs the care, and developments of a technological, legislative or societal nature.

The three types of health professionals who provide vision care in the United States - ophthalmologists, opticians, and optometrists - have been defined and described in Chapter I. It bears repeating that within the scope of each profession there are areas of service that are unique as well as areas of service that overlap with the scope of one of the other vision care professions. Many of these professional practitioners are assisted by paraprofessional ancillary personnel having varying degrees of formal training.

The population of the United States has many characteristics which affect the nature and extent of vision care needed and the adequacy of the care that is available. These characteristics, within any given geographic area, include: age distribution with particular attention to the very young and the very old; racial and ethnic differences; income levels; occupational differences; size and topography of the area under consideration; and proximity of health care in terms of distance, time, and available transportation. Naturally, there is a great deal of interaction among these variables.

It is certain that the future will bring developments, both social and technological, which will affect the quality, the availability and the accessibility of vision care. These developments may be as local as a city's new mass transit system that affects access to health care in one area or as sweeping as a national health insurance plan that extends the availability of vision care to everyone. Technology will continue to provide the means by which ophthalmologists and optometrists can improve the quality of their services and, in conjunction with the use of paraprofessional personnel, increase the number of patients receiving care over a period of time. Changes in the mode of vision care delivery, such as a larger number of group practices and health maintenance organizations (HMOs) as well as improved rapport between ophthalmologists and optometrists, could also have a significant impact on the provision of vision care. Yet none of the above developments can be charted or measured with any certainty; their interactive effects, even on a broad national scale, defy analysis. To try to isolate one area of the country for discussion would be futile, for no region can be isolated from the changes occurring elsewhere.

Even population projection, one of the most common analyses of the future, is fraught with uncertainty. The most recent projections, which are used in this report, are based on fertility rates which are higher than the present rates, yet no one can be sure how long the present rate will hold or whether it will increase or decrease in the near future. The current rate portends a shift to an older median age, which in turn may affect the amount and type of health care required by the population. Regional differences in age distribution and in internal migration compound the influence of age as a factor in health care measurement.

Since no mathematical model or computer program has yet been devised that can analyze and predict future needs based on the influence of all these factors, including "discontinuities" or unknown future events, an evaluation of health care must rely on simpler methodology taken in the context of the preceding discussion. In the field of vision care, a number of studies and reports have dealt with the adequacy of the present population of ophthalmologists and optometrists with respect to each state's population or to the total United States population. One of the more detailed studies, by Birchard and Elliot, was published in 1967 and took into account among other aspects: the health care plans in other countries; the percent of the United States population by age group having correctable refractive error; the amount of time required for an examination; the delivery of vision care in the armed forces; and the potential situation in 1980 with respect to the age distribution of the United States population and the existence of National Health Insurance. Their conclusion was that for the United States as a whole, the *optimum* ratio of population per optometrist would be 7,000 to 1, or 14.3 optometrists per 100,000 population.

Unfortunately, since 1967 the 7,000 to 1 ratio has also acquired the labels "desirable ratio", and even "adequate ratio", and has been taken out of Birchard and Elliot's original context (i.e., the age distribution of the United States population in 1980 and the existence of National Health Insurance) and applied to individual states under contemporary circumstances. The result has been a good deal of controversy and criticism, and in addition, certain changes have already occurred since Birchard and Elliott published their report.

One change has been the continuing decline in the birth rate in the United States, one effect of which will be an increase in the proportion of the population in the older age groups, with a concomitant shift in the nature of vision care services required. Another change has been an increase in the number of ophthalmologists, although, as mentioned earlier, the extent of that increase has been obscured by the reclassification of many EENT specialists as "ophthalmologists."

An example of a technological change is the development of a tonometry device that measures the intraocular pressure of the eye (a test for glaucoma) without the use of a topical anesthetic. Since the tonometer may be used by a paraprofessional technician, it increases the capability of an ophthalmologist or optometrist to examine more patients without sacrificing the quality of vision care.

Given the rapidity with which social and technological changes occur in our society and the complexity of the interactive influences of each variable involved, it appears to be nearly impossible to establish a fixed set of criteria to use as a basis for determining the specific numbers of ophthalmologists and optometrists required for the delivery of adequate eye care to the public.

The present report does not attempt to evaluate the adequacy of the delivery of vision care in New England nor does it recommend a specific number of ophthalmologists or optometrists for the New England region. More

appropriately, it considers the future of the delivery of optometric services in New England in the context of the following factors:

1. the projected increase of New England's population to 1990;
2. the age distribution of the currently active optometrists in New England; and
3. the potential increase in demand for optometric services when National Health Insurance is enacted.

New England Population

The most conservative population projection currently available (Series I-E projections, issued March 1972) estimates a total New England population of 14,682,000 in 1990, a 20 percent increase over the estimated 1973 population. While the current fertility rate in this country is lower than that used in this projection, the stability of the current rate is not known and its impact on each state has not been determined.

The population per optometrist ratio in New England in 1973 was 9,290 to 1. To have the same ratio in 1990, without regard to whether that ratio represents an adequate or inadequate supply of practitioners, would require 1,580 active optometrists practicing in New England.

Age Distribution of New England Optometrists

The age distribution of active optometrists in the United States in 1973 indicates that during the next 15 or 20 years a substantial proportion of the current supply of active practitioners can be expected to withdraw from active practice as a result of death or retirement. Moreover, the rate of withdrawal, or attrition, will accelerate beyond the present rate, as the post-World War II surge of optometric graduates reaches retirement age. Compared to the rest of the United States, New England has a slightly higher percentage of optometrists in the three higher age groups, as shown in Figure III-4, and may therefore also have a slightly higher rate of attrition in the years ahead.

In an article in the *Journal of the American Optometric Association*, Gordon G. Heath notes that the average length of practice for optometrists is 32 or 33 years. If the input of new optometric graduates were constant, this figure would result in an attrition rate of three percent (1/33) per year. However, since World War II the input of new optometric graduates has fluctuated significantly, and the present age distribution is skewed toward the higher ages. It is likely that before 1990 the attrition rate will substantially exceed three percent per year.

A number of reports have been published that evaluate the future supply of optometrists on a national scale. The attrition rates used in these national studies cannot be applied to individual states, or to one region, with any assurance of accuracy in prediction. Efforts are being made to develop manpower projection methods which legitimately can be applied to individual states, but in the meantime, the purposes of this report are best

served by a conservative approach using the average length of practice of 33 years and the corresponding three percent annual attrition rate. For the year 1990, three separate statements can be made concerning the status of the 1,308 optometrists actively practicing in New England in 1973:

1. An annual attrition rate of three percent would mean a loss of 667 active practitioners between 1973 and 1990 ($.03 \times 17 \times 1308 = 667.08$), or an average of slightly more than 39 per year.
2. By 1990, approximately 935 of the present pool of 1,308 active practitioners (71.5 percent) will have been in practice 33 years or longer. It must be remembered that 33 years is the *average* length of practice and the conclusion should not be made that all 935 will no longer be practicing. However, one-third of the 935 practitioners could by then have been in practice more than 50 years, which is often quoted as the *maximum* length of practice.
3. Active optometrists who are age 48 or older in 1973 would be age 65 or older by 1990. Approximately 700 of the 1,308 active optometrists in 1973 will fall into this category, representing 53.5 percent of the 1973 supply. Again, it must be stated that reaching age 65 does not automatically signal retirement, and many of these 700 optometrists *may* continue to be in active practice, either full or part-time.

National Health Insurance

When a National Health Insurance plan with full coverage for vision care is enacted sometime in the future, ophthalmologists and optometrists will face an increased demand for their services. Optometrists, who provide one of the primary points of entry into the health care system, see most of their patients on an ambulatory or out-patient basis. In assessing the impact of national health insurance on the United States total health care system, the Rand Corporation, a national research organization, stated, "almost certainly, ... prototypical insurance plan[s] would generate an increased demand [for ambulatory services] that would far exceed the current capacity of the delivery system." Another study, published in July 1974 by the Health Resources Administration (USDHEW), *The Impact of Archetypal National Health Insurance Plans on United States Health Manpower Requirements*, showed that for 28 health manpower specialties, the 1980 health manpower requirements for optometrists would undergo the greatest estimated percentage changes under all plans for all parameters used in the study.

The conclusion to be made is simply that New England faces a loss by 1990 of 50 percent or more of the 1973 supply of 1,308 active optometrists. At the same time, New England's population will increase by perhaps as much as 20 percent, and enactment of National Health Insurance legislation will further increase the demand for optometric services.

Ophthalmologists should not be expected to alleviate the potential reduction in total vision care delivery in New England which might result from the loss of active optometric practitioners. Ophthalmologists are fewer in number, their median age in 1968 was relatively high (51.4 years), and because

of the facilities required to support their surgical and medical activities, they tend to locate their practices closer to metropolitan centers rather than in rural areas. Moreover, the EENT specialists who practice ophthalmology and who may tend less than their board-certified ophthalmologist colleagues to locate their practices in metropolitan areas, have a significantly higher median age than that for all "ophthalmologists."

It is imperative that the New England region have a continuous input of new optometric graduates to compensate for the expected losses of currently active practitioners. Efforts should also be made to encourage their distribution throughout all counties or regions of each state and to promote cooperative working relationships between ophthalmologists and optometrists, as well as the use of paraprofessional vision care personnel. The impact of the Massachusetts College of Optometry upon optometric education and manpower in New England is discussed in Chapters IV and VI of this report.

OSTEOPATHY

The osteopathic manpower situation in New England is quite different from that of optometry. In terms of practitioners the number of osteopathic physicians actively practicing in 1973 was 509, less than half the number of active optometrists. Moreover, the median age of active osteopathic physicians in New England in 1973 was over 60 years, compared to 48.8 years for optometrists.

Two other factors should be identified. First, the optometric manpower situation in New England is directly affected by the Massachusetts College of Optometry because it has produced and continues to produce a large proportion of the practitioners for this region. None of the nine colleges of osteopathic medicine currently operating is located in New England. Therefore, the supply of practitioners for this region is somewhat unsure, since it depends upon the return of New Englanders who attended schools outside the region or upon an input of osteopathic physicians who were not originally from New England.

Second, osteopathic manpower must be considered in the context of the region's allopathic physician manpower situation, three aspects of which are especially pertinent: (1) New England is the location of several excellent allopathic medical colleges - there is a total of nine schools in five of the six states; (2) there were 22,774 active non-federally employed M.D.'s in New England in 1973, of whom ten percent were involved in non-patient care activities and 20 percent were in internships or residencies; (3) in 1970, 21.3 percent of all M.D.'s in New England were foreign medical graduates (FMGs), whose training may or may not have been the qualitative equivalent of a U.S. medical education. Three New England states - Connecticut, Maine and Rhode Island - were listed as being highly dependent upon FMGs in 1970, with proportions of FMGs to all M.D.'s in each state of 33.8 percent, 24.0 percent and 23.9 percent respectively.

Although there are many similarities in allopathic and osteopathic education and practice, and although the goals of these two medical professions are identical with respect to optimum health care for the entire community, their approaches are somewhat different. As noted in Chapter I (see page 16), osteopathic medicine bases its approach on a philosophy which permeates all osteopathic teaching and practice and from which evolves a holistic approach to the patient and an emphasis on the influence of structural integrity on health and disease affecting the entire human body.

Although fewer in number in New England than the M.D.'s, the D.O.'s are distributed throughout the region to an extent that their presence ensures medical care to many residents who otherwise might not have immediate access to such care. Additionally, the residents of many other New England communities have been offered a choice of the two approaches to medical care, and a significant proportion prefers the approach of the osteopathic physician.

MANPOWER DATA FOR OSTEOPATHY

The 1974 *Yearbook and Directory of Osteopathic Physicians*, published by the American Osteopathic Association, reveals that in 1973, there were 509 active osteopathic physicians (D.O.'s) in New England who were not federally employed. In contrast, there were 22,774 non-federally employed active

allopathic physicians (M.D.'s) in New England in the same year, a figure which includes M.D.'s who received their medical education outside the United States.

Table III-6 displays the physician manpower situation in New England in 1973. As is the case with the optometry manpower data, the ratios of population per physician are provided as a reference point and for comparisons among the states.

Relatively speaking, on a population to practitioner basis, New England has fewer osteopathic physicians but more allopathic physicians than the United States as a whole. The 509 active osteopaths in New England represent 3.7 percent of the osteopaths in the United States; the region's allopathic physicians account for 7.4 percent of the nation's total M.D.'s. The combined total of 23,283 physicians is 7.2 percent of the total number of active non-federal physicians in the United States.

Three New England states, Maine, Rhode Island and Vermont, have a population per osteopathic physician ratio that is equal to or better (i.e., lower) than the same ratio for the total United States (15,000 to 1), although the overall New England ratio of 23,870 to 1 is significantly higher than the U.S. ratio. Four New England states - Connecticut, Massachusetts, Rhode Island, and Vermont - and New England overall have a population per allopathic physician ratio that is better than the total U.S. ratio of 670 to 1. Maine has the lowest osteopathic ratio and the highest allopathic ratio among the New England states while Connecticut has the highest osteopathic ratio and second-lowest allopathic ratio.

Note that the allopathic physician data include citizens of the United States and of other countries who have received their medical education outside the United States and are collectively known as foreign medical graduates. Some controversy exists over the quality of some foreign medical educational programs, especially with respect to clinical training and experience, compared to a U.S. medical education, and those FMGs who are not familiar with the English language or with United States customs, mores and colloquialisms may not always deal successfully with their American patients.

The number of immigrating FMGs increased by 130.7 percent from 1963 to 1973, and at least one New England state, Rhode Island, has exhibited concern about the high proportion of FMGs among its physician population which, at 33.8 percent in 1970, was the second-highest in the country. Connecticut and Maine, with 1970 FMG proportions of 24.0 percent and 23.9 percent respectively, were also classified as being highly dependent upon FMGs. The remaining three New England states had the following percentages of FMGs among their physician populations: New Hampshire, 21.9 percent; Massachusetts, 18.7 percent; Vermont, 12.9 percent.

Recently, in mid-1975, studies were completed in Massachusetts and Rhode Island that reported shortages of family physicians in those two states, a circumstance that appears to be one result of the tendency among physicians to limit their practice to a particular medical specialty. This tendency has existed historically to a far greater extent among allopathic physicians than among osteopathic physicians; the percentages of specialty practices among osteopathic and allopathic physicians are described in detail in Tables III-10 and III-11, which appear in a later portion of this chapter.

As in the professions of optometry and podiatry, the proportion of female practitioners in osteopathic medicine in New England is quite small. Of the 401 active non-federal osteopathic physicians practicing in the region in 1971, 26 (6.5 percent) were women, although the proportions among the six states varied considerably. In three states, Connecticut, Maine and Vermont, the proportions were only 3.0 percent, 1.4 percent, and 4.3 percent respectively, while the proportions in Massachusetts, New Hampshire and Rhode Island were much higher (12.6 percent, 16.7 percent, and 12.1 percent respectively). However, all but two of the female osteopathic physicians in the region were age 50 or older, which implies that the percentages are likely to decrease in the future.

GEOGRAPHICAL DISTRIBUTION OF OSTEOPATHIC PHYSICIANS IN NEW ENGLAND

The general pattern of physician distribution in New England is that the larger the population of a county, the greater the number of physicians located there. Of 67 counties in New England, six were not the location of an osteopathic practice in 1973. Two of these counties were in Vermont, two were in New Hampshire, and there was one each in Connecticut and Massachusetts. All counties were the location of a practice of a non-federally employed M.D. in 1973, although two counties in Vermont had only one M.D. each. While the distribution of physicians by county presents a more detailed picture of manpower than does the total number for a state, additional factors such as area, topography, distances and transportation availability also affect the adequacy of the manpower distribution and preclude any conclusions based on county distribution alone.

Tables III-7a through III-7f list each county in New England, the estimated 1973 population of each county, and the number of active non-federal osteopathic and allopathic physicians in each county in 1973. Osteopathic physicians were widely, although thinly, distributed throughout New England; six counties had no active osteopathic practitioners, and 12 counties had only one each. M.D.'s were also widely distributed with at least one practitioner in each county. Just two counties had only one M.D., and the next lowest number in any county was eight M.D.'s. Combining the two types of physicians, only one county had fewer than two physicians in active practice.

Recognizing the unbalanced distribution of physicians, in which large geographic areas are served by an insufficient number of physicians, the federal government has designated several counties or portions of counties in New England as "physician shortage areas," and has provided for the forgiveness of a percentage of a medical education loan if a physician establishes a practice in one of those areas.

TABLE III-6
ACTIVE NON-FEDERAL PHYSICIAN MANPOWER, 1973

	CT	ME	MA	NH	RI	VT	Total N.E.	Total U.S.
1973 Estimated Population (numbers in 1,000s)	3,076	1,028	5,818	791	973	464	12,151	209,851
Active D.O.'s	40	187	158	14	79	31	509	13,900*
Population per D.O. ¹	76,900	5,500	36,820	56,500	12,320	14,970	23,870	15,000
Active M.D.'s ²	6,005	1,144	12,183	1,068	1,549	825	22,774	308,543
Population per M.D. ¹	510	900	480	740	630	560	530	680
Total Physicians	6,045	1,331	12,341	1,082	1,628	856	23,283	322,443
Population per Physician ¹	510	770	470	730	600	540	520	650

*Estimated. The total number of non-military D.O.'s is 13,971.

¹Rounded to nearest ten.

²Includes Foreign Medical Graduates (see text).

Sources: *Current Population Reports*, Series P-25, No. 520, "Population Estimates and Projections: Provisional Estimates of Resident Population of States," July 1, 1973, U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, July 1974).

1974 Yearbook and Directory of Osteopathic Physicians (Chicago: American Osteopathic Association, January 1974).

Distribution of Physicians in the U.S., 1973 (Chicago: American Medical Association, 1974).

TABLE III-7a
DISTRIBUTION OF ACTIVE PHYSICIANS IN CONNECTICUT

County	Estimated Population 1973	Active Non-Federal D.O.'s 1973	Active Non-Federal M.D.'s 1973
Fairfield	787,800	16	1,508
Hartford	824,200	8	1,741
Litchfield	146,900	4	175
Middlesex	121,000	2	173
New Haven	756,800	7	1,996
New London	239,800	2	262
Tolland	110,900	0	75
Windham	88,300	1	75
Total	3,076,000	40	6,005

Sources: *Current Population Reports*, Series P-26, No. 79, "Federal-State Cooperative Program for Population Estimates: Estimates of the Population of Connecticut Counties: July 1, 1972 and 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, August 1974).

1974 Yearbook and Directory of Osteopathic Physicians (Chicago: American Osteopathic Association, January 1974).

Distribution of Physicians in the U.S., 1973 (Chicago: American Medical Association, 1974).

TABLE III-7b
DISTRIBUTION OF ACTIVE PHYSICIANS IN MAINE

County	Estimated Population 1973	Active Non-Federal D.O.'s 1973	Active Non-Federal M.D.'s 1973
Androscoggin	93,300	3	118
Aroostook	94,800	6	64
Cumberland	197,200	74	370
Franklin	23,600	3	15
Hancock	37,000	5	42
Kennebec	98,300	17	128
Knox	31,100	4	45
Lincoln	21,600	4	20
Oxford	44,900	10	35
Penobscot	129,600	24	134
Piscataquis	16,400	3	9
Sagadahoc	24,900	1	20
Somerset	41,500	9	22
Waldo	25,500	2	14
Washington	31,200	2	20
York	117,600	20	88
Total	1,028,000	187	1,144

Sources: *Current Population Reports*, Series P-26, No. 59, "Federal-State Cooperative Program for Population Estimates: Estimates of the Population of Maine Counties: July 1, 1972 and 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, March 1974).

1974 Yearbook and Directory of Osteopathic Physicians (Chicago: American Osteopathic Association, January 1974).

Distribution of Physicians in the U.S., 1973 (Chicago: American Medical Association, 1974).

TABLE III-7c
DISTRIBUTION OF ACTIVE PHYSICIANS IN MASSACHUSETTS

County	Estimated Population 1973	Active Non-Federal D.O.'s 1973	Active Non-Federal M.D.'s 1973
Barnstable	109,000	7	164
Berkshire	148,900	5	247
Bristol	461,300	6	432
Dukes	6,900	0	8
Essex	647,400	24	796
Franklin	60,900	2	68
Hampden	461,000	6	616
Hampshire	134,300	3	151
Middlesex	1,421,800	35	2,609
Nantucket	4,200	1	11
Norfolk	614,300	23	1,374
Plymouth	364,700	16	325
Suffolk	734,700	18	4,503
Worcester	648,900	12	879
Total	5,818,000	158	12,183

Sources: *Current Population Reports*, Series P-26, No. 91, "Federal-State Cooperative Program for Population Estimates: Estimates of the Population of Massachusetts Counties and Metropolitan Areas: July 1, 1972 and 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, October 1974).

1974 Yearbook and Directory of Osteopathic Physicians (Chicago: American Osteopathic Association, January 1974).

Distribution of Physicians in the U.S., 1973 (Chicago: American Medical Association, 1974).

TABLE III-7d
DISTRIBUTION OF ACTIVE PHYSICIANS IN NEW HAMPSHIRE

County	Estimated Population 1973	Active Non-Federal D.O's 1973	Active Non-Federal M.D.'s 1973
Belknap	34,800	2	52
Carroll	20,800	0	29
Cheshire	55,300	1	49
Coos	34,000	1	35
Grafton	57,900	0	315
Hillsborough	237,700	4	248
Merrimack	87,400	1	125
Rockingham	153,700	1	117
Strafford	77,200	2	67
Sullivan	31,900	2	31
Total	791,000	14	1,068

Sources: *Current Population Reports*, Series P-26, No. 52, "Federal-State Cooperative Program for Population Estimates: Estimates of the Population of New Hampshire Counties and Metropolitan Areas: July 1, 1972 and 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, January 1974).

1974 Yearbook and Directory of Osteopathic Physicians (Chicago: American Osteopathic Association, January 1974).

Distribution of Physicians in the U.S., 1973 (Chicago: American Medical Association, 1974).

TABLE III-7e
DISTRIBUTION OF ACTIVE PHYSICIANS IN RHODE ISLAND

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Non-Federal D.O.'s 1973</u>	<u>Active Non-Federal M.D.'s 1973</u>
Bristol	46,100	4	50
Kent	148,700	24	147
Newport	99,700	4	74
Providence	586,300	42	1,199
Washington	<u>92,200</u>	<u>5</u>	<u>79</u>
Total	973,000	79	1,549

Sources: *Current Population Reports*, Series P-26, No. 65, "Federal-State Cooperative Program for Population Estimates: Estimates of the Population of Rhode Island Counties and Metropolitan Areas: July 1, 1972 and 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, April 1974).

1974 Yearbook and Directory of Osteopathic Physicians (Chicago: American Osteopathic Association, January 1974).

Distribution of Physicians in the U.S., 1973 (Chicago: American Medical Association, 1974).

TABLE III-7f
DISTRIBUTION OF ACTIVE PHYSICIANS IN VERMONT

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Non-Federal D.O.'s 1973</u>	<u>Active Non-Federal M.D.'s 1973</u>
Addison	24,800	1	16
Bennington	28,800	3	45
Caledonia	24,000	1	25
Chittenden	105,700	4	426
Essex	5,700	0	1
Franklin	32,700	0	30
Grand Isle	3,900	1	1
Lamoille	14,200	2	15
Orange	19,100	1	21
Orleans	21,300	1	10
Rutland	54,700	3	65
Washington	48,300	4	63
Windham	35,100	3	52
Windsor	<u>46,000</u>	<u>7</u>	<u>55</u>
Total	464,000	31	825

Sources: *Current Population Reports*, Series P-26, No. 49, "Federal-State Cooperative Program for Population Estimates: Estimates of the Population of Vermont Counties: July 1, 1972 and 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, January 1974).

1974 Yearbook and Directory of Osteopathic Physicians (Chicago: American Osteopathic Association, January 1974).

Distribution of Physicians in the U.S., 1973 (Chicago: American Medical Association, 1974).

STATE OF BIRTH OF NEW ENGLAND OSTEOPATHIC PHYSICIANS

The state in which a person is born may not actually be the state in which he spends most of his life or that she calls her home state. To conduct a study of the original residence and the migration pattern of a practitioner now located in a particular state or region would require data that are not currently available. At this time, the only information that is available pertains to the state of birth of the active osteopathic physicians in New England as of 1971 (displayed in Table III-8).

In New England, 40.1 percent of the active osteopaths were born in the state in which they now practice, ranging from 23.6 percent in Maine to 63.8 percent in Massachusetts. The high percentage in Massachusetts may be due in part to the previous existence of a school of osteopathic medicine in the Boston area (refer to Chapters I and VIII for historical developments and to Chapter IV for education statistics).

In each state, at least half of the osteopathic physicians were born in one of the New England states, with a percentage of 60.8 for the entire region. Another 20 percent were born in New Jersey, New York or Pennsylvania.

While it appears that most of the osteopathic physicians who practice in New England were born in New England, the extent to which recent osteopathic graduates from New England are returning to the region cannot be determined at this time. New England osteopathic students must attend a college elsewhere in the country (the nearest college is in Philadelphia), and in 1973 there were only eight residencies available in New England osteopathic hospitals and only four osteopathic physicians were serving in residencies at allopathic hospitals. The location in which a physician completes residency is often a positive influence on where he or she establishes practice. Furthermore, age distribution data, discussed in a later section of this chapter, reveal a disproportionately low number of younger osteopathic physicians in New England, indicating a declining rate of input of new graduates.

TABLE III-8
ACTIVE NON-FEDERAL OSTEOPATHIC PHYSICIANS BY STATE OF BIRTH, 1971

	CT	ME	MA	NH	RI	VT	Total N.E.
<u>State of Birth</u>							
Connecticut	11	4	4	0	1	0	20
Maine	2	35	1	0	0	0	38
Massachusetts	4	31	74	2	11	7	129
New Hampshire	0	1	2	5	3	0	11
Rhode Island	0	5	9	0	28	0	33
Vermont	0	1	3	0	1	8	13
Total New England	17	77	84	7	44	15	244
Percentage born in N.E.	50.0	52.0	72.4	50.0	67.7	62.5	60.8
New Jersey	3	19	8	1	8	4	43
New York	3	5	3	1	2	1	15
Pennsylvania	3	14	5	0	3	2	27
Other U.S.	5	29	13	5	6	2	60
Non-U.S. and Not Reported	3	4	3	0	2	0	12
Total	34	148	116	14	65	24	401

Source: Bureau of Health Manpower, Health Resources Administration, USDHEW,
unpublished data provided November 1974.

TYPES OF PRACTICE

The distribution of types of osteopathic practice in New England differs in some respects from the distribution in the rest of the United States. As shown in Table III-9, over 82 percent of New England osteopaths were solo practitioners in 1971, while just under 65 percent of all osteopaths in the United States had a solo practice. On a percentage basis, there are many more partnerships and group practices in the U.S. than in New England, although the proportion of practices with other physicians, on a non-group basis, is approximately the same in New England as elsewhere in the United States.

One explanation for the higher proportion of solo practitioners in New England may be that the osteopathic physicians are thinly spread throughout this region, with no osteopathic college and only five osteopathic hospitals around which to cluster. Such a distribution would be expected to result in a high percentage of solo practitioners who are, for the most part, in general practice.

Indeed, in 1973, 348 of New England's 509 active non-federally employed osteopathic physicians (68.4 percent) reported themselves as general practitioners (GP). Many of these reported that they devoted varying amounts of time to a specialty interest but considered themselves GPs first and foremost. Of the specialty areas to which the remaining physicians limited their practices, the largest proportion practiced manipulative therapy exclusively. This group of practitioners tended to be older than other osteopathic physicians, a fact that reflects the broader scope and improved quality of osteopathic medical education that have been attained in the past few decades. An analysis of practice specialty for each state in New England is shown in Table III-10.

Physicians with the M.D. degree, on the other hand, engage in specialty practice to a much greater extent. In New England, 11.3 percent of the M.D.'s were classified as general practitioners in 1973, a smaller proportion than the 16.6 percent in general practice nationally, as shown in Table III-11. "General Practice," in the source for this data, combines Family Practice and General Practice. The less populated, more rural states - Maine, New Hampshire and Vermont - had higher percentages of general practitioners than Connecticut, Massachusetts and Rhode Island. The specialty of internal medicine accounted for the highest proportion of New England M.D.'s, followed by general practice, general surgery and psychiatry. In all New England states, the number of M.D. general practitioners was higher than the total number of osteopathic physicians. Note that, as previously mentioned, 21.3 percent of the M.D.'s in New England are foreign medical graduates; the effect of the FMGs on the proportions of specialty practice is not known.

As the osteopaths who exclusively practice manipulative therapy withdraw from active practice, the *proportion*, but not necessarily the numbers, of general practitioners can be expected to increase. At the same time, and of even more importance, the age distribution for all osteopathic physicians in New England indicates that a high rate of attrition will occur during the next 15 years, a development which will have a pronounced effect upon the distribution of primary care physicians in general practice.

TABLE III-9
TYPE OF OSTEOPATHIC MEDICAL PRACTICE BY STATE, 1971

Employment Status	CT	ME	MA	NH	RI	VT	Total N.E.	Non- N.E.	Total U.S.
Solo	23	106	86	11	42	19	287	4,961	5,248
Percent	92.0	80.3	88.0	91.7	75.0	88.4	82.7	63.8	64.6
Partnership	1	7	4		5	1	18	1,073	1,091
Percent	4.0	5.3	4.0		8.9	4.5	5.2	13.8	13.4
Non-group with other Physicians		5	2		2		9	176	185
Percent		3.8	2.0		3.8		2.6	2.3	2.3
Group Practice		6					6	616	622
Percent		4.5					1.7	7.9	7.7
Osteopathic College							0	132	132
Percent							-	1.7	1.6
Non-Government Hospital		8	3		6	2	19	575	594
Percent		6.1	3.0		10.7	9.1	5.5	7.4	7.3
City/County Government Hospital			1	1			2	72	74
Percent			1.0	8.3			0.6	0.9	0.9
Other City/ County Government							0	8	8
Percent							-	0.1	0.1
State Government Hospital			4		1		5	74	79
Percent			4.0		1.8		1.4	1.0	1.0
Other State Government							0	12	12
Percent							-	0.1	0.1
Other Organization	1						1	74	75
Percent	4.0						0.3	1.0	0.9
Total	25	132	100	12	56	22	347	7,773	8,120
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Does not include active osteopathic physicians with less than 30 hours per week in any one employment status.

Source: Bureau of Health Manpower, Health Resources Administration, USDHEW, unpublished data provided November 1974.

TABLE III-10
OSTEOPATHIC MEDICAL SPECIALTY PRACTICE BY STATE, 1973

	CT	ME	MA	NH	RI	VT	Total N.E.
General Practice	15	149	102	8	53	21	348
Percent	37.5	79.7	64.6	57.1	67.1	67.7	68.4
<u>Practice limited to:</u>							
Internal Medicine	0	3	1	0	3	0	7
Percent	-	1.6	0.6	-	3.8	-	1.4
Pediatrics	0	0	0	0	1	0	1
Percent	-	-	-	-	1.3	-	0.2
Obstetrics/ Gynecology	0	0	1	0	1	0	2
Percent	-	-	0.6	-	1.3	-	0.4
Ophthalmology ¹	0	2	0	0	1	0	3
Percent	-	1.1	-	-	1.3	-	0.6
Orthopedic Surgery	0	1	1	0	2	0	4
Percent	-	0.5	0.6	-	2.5	-	0.8
Manipulative Therapy	19	7	27	3	6	8	70
Percent	47.5	3.7	17.1	21.4	7.6	25.8	13.7
Other Specialty	0	17	3	0	10	0	30
Percent	-	9.1	1.9	-	12.6	-	5.9
Not Reported	6	8	23	3	2	2	44
Percent	15.0	4.3	14.6	21.4	2.5	6.5	8.6
Total	40	187	158	14	79	31	509
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹Includes those practicing ophthalmology in combination with otolaryngology or otorhinolaryngology.

Source: 1974 Yearbook and Directory of Osteopathic Physicians (Chicago: American Osteopathic Association, January 1974).

TABLE III-11
ALLOPATHIC MEDICAL SPECIALTY PRACTICE BY STATE, 1973

	CT	ME	MA	NH	RI	VT	Total N.E.	Total U.S.
<u>Practice classified as:</u>								
General Practice ¹	602	239	1,210	215	171	126	2,563	51,085
Percent	10.0	20.9	9.9	20.1	11.0	15.3	11.3	16.6
Internal Medicine	1,035	149	2,254	159	297	148	4,042	44,274
Percent	17.2	13.0	18.5	14.9	19.2	17.9	17.7	14.3
Pediatrics	407	51	689	58	111	46	1,362	18,318
Percent	6.8	4.5	5.7	5.4	7.2	5.6	6.0	5.9
Obstetrics/ Gynecology	339	52	587	53	88	40	1,159	19,171
Percent	5.6	4.5	4.8	5.0	5.7	4.8	5.1	6.2
Ophthalmology	172	40	348	33	37	18	648	9,865
Percent	2.9	3.5	2.9	3.1	2.4	2.2	2.8	3.2
Orthopedic Surgery	181	33	371	34	55	26	700	9,631
Percent	3.0	2.9	3.0	3.2	3.5	3.2	3.1	3.1
Other Specialty	2,864	517	5,936	488	700	389	10,894	134,529
Percent	47.7	45.2	48.7	45.7	45.2	47.1	47.8	43.6
Not Reported	405	63	788	28	90	32	1,406	21,670
Percent	6.7	5.5	6.5	2.8	5.8	3.9	6.2	7.0
Total ²	6,005	1,144	12,183	1,068	1,549	825	22,774	308,543
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹Includes General Practice and Family Practice.

²Includes Foreign Medical Graduates (see text).

Source: *Distribution of Physicians in the U.S., 1973* (Chicago: American Medical Association, 1974).

AGE DISTRIBUTION OF OSTEOPATHIC PHYSICIANS

The mean (average) and median (the point at which exactly 50 percent are older) ages of osteopathic physicians in New England are higher than those of optometrists. More significantly they are also higher than those for osteopaths throughout the United States. The age distribution of osteopaths in New England shows a dramatically disproportionate number of active practitioners in the oldest age groups.

Table III-12 shows the age statistics for each New England state, the region, and the rest of the United States in 1971, the most recent year for which such a comparison is available. The mean and median ages in Connecticut exceeded 66 years, and only in Rhode Island did the median age fall below 50 years. For the region, the mean was 55.6 years and the median was 57.9 years, compared to the overall United States mean and median of 48.4 years and 47.2 years, respectively.

Figure III-5 illustrates the percentage data contained in the last three categories of Table III-12. New England has a significant imbalance in terms of very few younger osteopathic physicians and proportionately more older ones. The solid bars on the chart, representing the U.S. total, show a distribution of age that can be considered "normal" with gradually decreasing percentages in the older age groups. This gradual decrease results from two factors: (a) physicians naturally withdraw from active practice with advancing age; and (b) osteopathic physicians have been graduated in increasing numbers during the past three decades, but with no postwar "bulge" as occurred in optometry and in podiatry.

At one time, New England residents could obtain an osteopathic education in New England (refer to Chapters I, IV, and VIII), but since 1944, they have had to go out of the region to pursue that educational aspiration. Clearly, the numbers of new osteopathic physicians in this region have not been as great as they were in the past, resulting in a pronounced age maldistribution.

Table III-13 and Figures III-6 and III-7 provide more recent (1973) age statistics for active non-federal osteopathic physicians in New England, and in each state the mean and median ages have increased since 1971. In four states, the mean and median ages are over 60 years, and the median age for the region is 60.3 years, indicating that exactly half of New England's osteopathic physicians are older than that age. Figure III-6 illustrates the age distribution for the region, and Figure III-7 illustrates the age distribution for each New England state. The distribution is essentially similar in every state except Rhode Island, which shows almost as many osteopaths in the three younger age groups as in the three older.

In 1973, the mean age of all federal and non-federal allopathic physicians in the United States and its possessions, whether active or inactive, was 46.1 years, and the median was 44.0 years. Table III-14 lists the distribution by age group, and Figure III-8 illustrates the distribution by percent. It is interesting to compare the shape of Figure III-8 to that of Figure III-4 for optometry, and to Figure III-5 for osteopathy.

The future osteopathic manpower situation implied in these statistics is more serious than that for optometry. The high median age and large number of active osteopathic practitioners in the "60-69" age group indicate that New England can expect to lose the majority of its osteopathic physicians from active practice as a result of death and retirement between now and 1990. The age maldistribution of optometrists in New England is attributable to the movement through time of a large postwar increase of graduates; the age maldistribution of active osteopathic physicians in New England can be attributed to a decreased input of new osteopathic graduates, the present rate of which cannot compensate for the expected attrition rate during the next 15 years. The result will be a net loss of osteopathic physicians serving the region, which, because of their distribution in non-metropolitan areas and of their tendency to engage in general practice, will have a deleterious effect upon the delivery of medical care in New England.

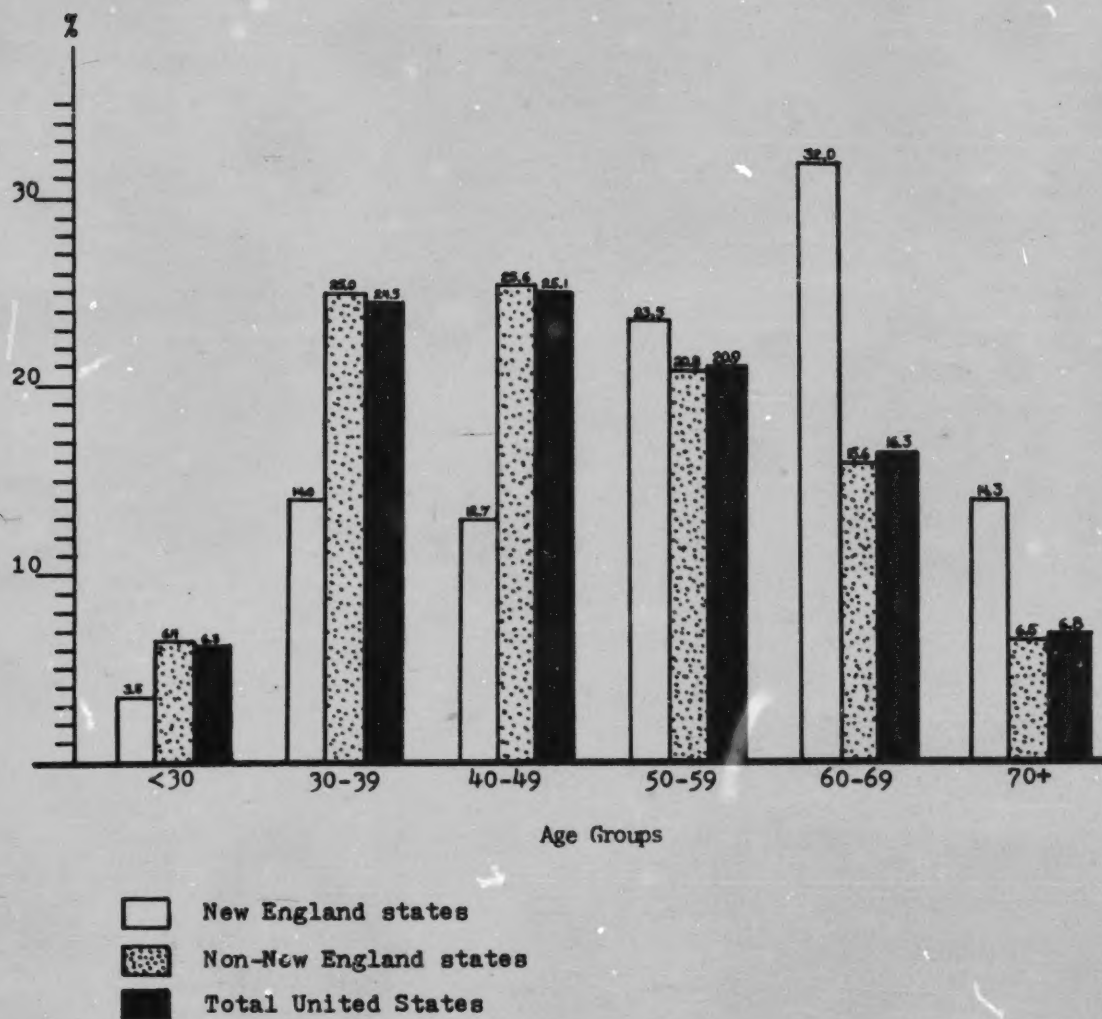
TABLE III-12
ACTIVE FEDERAL AND NON-FEDERAL OSTEOPATHIC PHYSICIANS BY AGE AND STATE, 1971

Age	CT	ME	MA	NH	RI	VT	Total N.E.		Non-N.E.		Total U.S. ¹	
							No.	%	No.	%	No.	%
Under 30	0	7	1	1	5	1	15	3.5	615	6.4	630	6.3
30-39	0	27	15	0	16	3	61	14.0	2,395	25.0	2,456	24.5
40-49	1	28	9	0	15	2	55	12.7	2,455	25.6	2,510	25.1
50-59	5	38	42	4	7	6	102	23.5	1,995	20.8	2,097	20.9
60-69	16	51	38	5	19	10	139	32.0	1,499	15.6	1,638	16.3
70 and over	12	11	24	4	7	4	62	14.3	621	6.5	683	6.8
Not Reported	0	0	0	0	0	0	0	-	6	0.1	6	0.1
Total	34	162	129	14	69	26	434	100.0	9,586	100.0	10,020	100.0
MEAN	66.2	52.8	58.0	62.0	50.6	57.4	55.6		48.1		48.4	
MEDIAN	66.4	54.5	58.9	63.5	48.5	60.5	57.9		46.8		47.2	

¹Does not include U.S. possessions.

Source: Bureau of Health Manpower, Health Resources Administration, USDHEW, unpublished data provided 1974.

FIGURE III-5
COMPARATIVE AGE DISTRIBUTIONS OF ACTIVE
OSTEOPATHIC PHYSICIANS, 1971



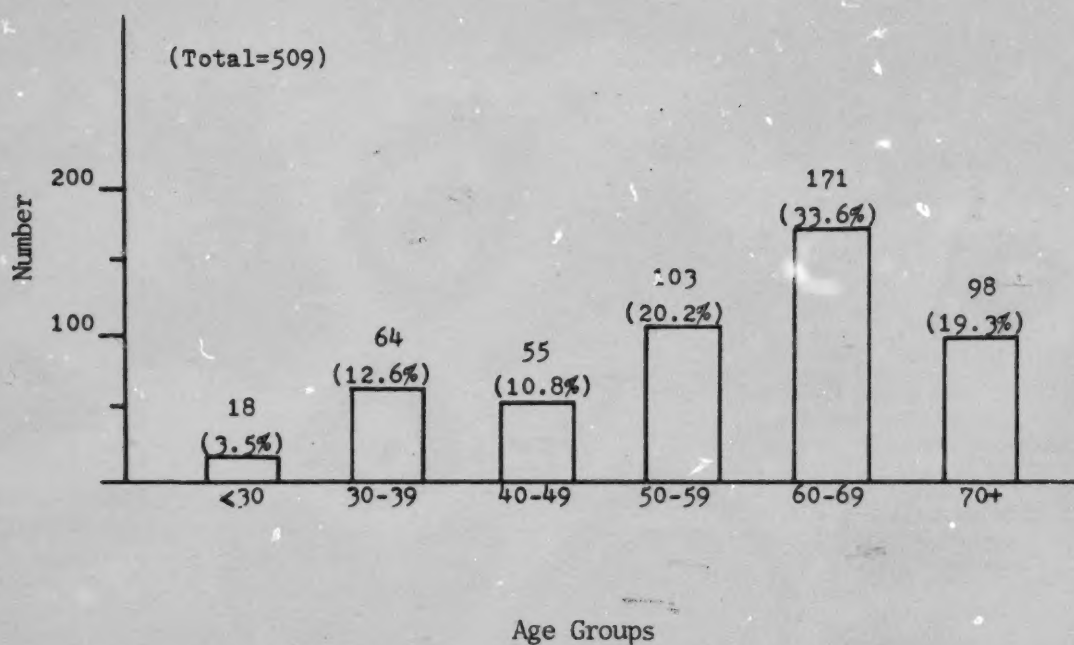
Source: Bureau of Health Manpower, Health Resources Administration, USDHEW, unpublished data provided November 1974.

TABLE III-13
ACTIVE NON-FEDERAL OSTEOPATHIC PHYSICIANS BY AGE AND STATE, 1973

Age	CT	ME	MA	NH	RI	VT	Total N.E.
Under 30	3	7	3	0	4	1	18
Percent	7.5	3.8	1.9	-	5.1	3.2	3.5
30-39	0	35	12	0	15	2	64
Percent	-	18.7	7.6	-	19.0	6.5	12.6
40-49	0	21	13	0	18	3	55
Percent	-	11.2	8.2	-	22.8	9.7	10.8
50-59	6	41	36	4	11	5	103
Percent	15.0	21.9	22.8	28.6	13.9	16.1	20.2
60-69	16	66	53	6	18	12	171
Percent	40.0	35.3	33.6	42.8	22.8	38.7	33.6
70 and over	15	17	41	4	13	8	98
Percent	37.5	9.1	25.9	28.6	16.4	25.8	19.3
Total	40	187	158	14	79	31	509
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
MEAN	64.2	54.0	60.3	64.6	52.7	60.5	57.2
MEDIAN	66.4	56.9	62.3	64.5	51.8	63.2	60.3

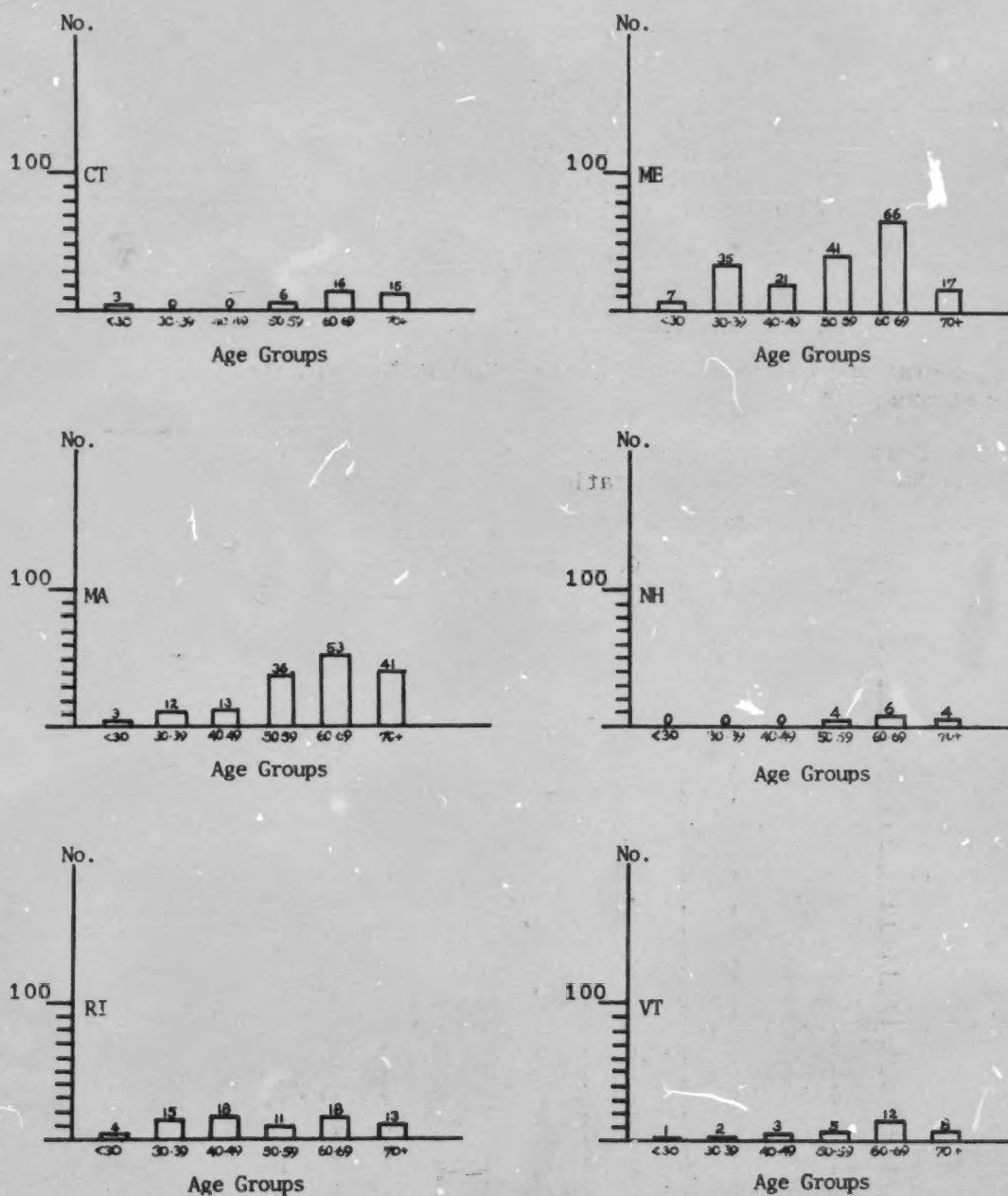
Source: 1974 Yearbook and Directory of Osteopathic Physicians
(Chicago: American Osteopathic Association, January 1974).

FIGURE III-6
AGE DISTRIBUTION OF ACTIVE NON-FEDERAL OSTEOPATHIC
PHYSICIANS IN NEW ENGLAND, 1973



Source: 1974 Yearbook and Directory of Osteopathic Physicians (Chicago: American Osteopathic Association, January 1974).

FIGURE III-7
ACTIVE NON-FEDERAL OSTEOPATHIC PHYSICIANS
BY AGE, NEW ENGLAND STATES, 1973



Source: 1974 Yearbook and Directory of Osteopathic Physicians (Chicago: American Osteopathic Association, January 1974).

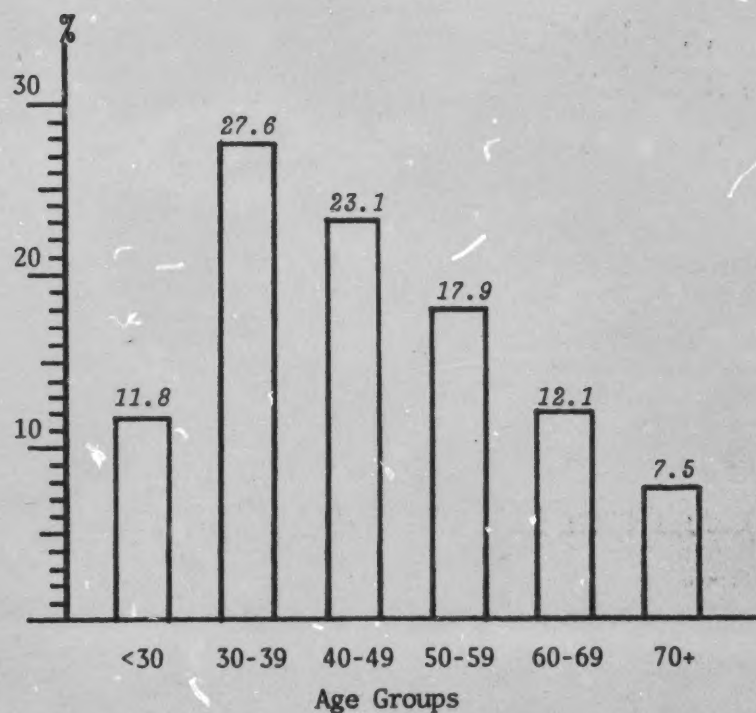
TABLE III-14
AGE DISTRIBUTION OF ALLOPATHIC PHYSICIANS, 1973

Age	Number	Percent
Under 30	43,104	11.8
30-39	108,108	27.6
40-49	84,812	23.1
50-59	65,494	17.9
60-69	44,523	12.1
70 and over	27,338	7.5
Total ¹	366,379	100.0

¹All federal and non-federal M.D.'s, including FMGs, in the U.S. and possessions.

Source: *Distribution of Physicians in the U.S., 1973* (Chicago: American Medical Association, 1974).

FIGURE III-8
AGE DISTRIBUTION OF ALLOPATHIC PHYSICIANS, 1973



Source: *Distribution of Physicians in the U.S., 1973* (Chicago: American Medical Association, 1974).

DEMAND FOR HEALTH CARE

As discussed in the optometry section of this chapter, the difficulties in measuring the adequacy of health manpower have not been fully overcome, and projections of future supply and demand involve variables whose interactions defy clear-cut analysis. The adequacy of the supply of osteopathic physicians is influenced by the supply of allopathic physicians, the number of osteopathic hospitals, the extent of cooperative relationships between the two types of physicians, as well as all the factors mentioned earlier in connection with optometry.

The osteopathic physicians in New England contribute substantially to the number of general practitioners located throughout the region, particularly in less populated areas. Despite New England's favorable overall ratio of population per physician, several counties or other geographic areas in New England are designated as physician shortage areas by the federal government for the purpose of repayment of student loans, and two states have reported a shortage of family physicians and an overabundance of certain specialists.

By 1990, 383 (75.2 percent) of the 1973 pool of 509 active New England osteopathic physicians will be age 65 or over. While physicians do not necessarily retire at age 65, most of this proportion will no longer be providing full-time osteopathic medical care. This loss will not be compensated by an equal input of new osteopathic practitioners if the present educational situation persists. It will represent a depletion of the number of general practitioners in many areas in New England, thus reducing the availability of immediate primary care for many of the region's residents and eliminating the opportunity to choose the osteopathic approach to medical care.

PODIATRY

The podiatry manpower information reported in this chapter is based upon data compiled as the result of a nationwide survey of podiatrists conducted late in 1974 by the National Center for Health Statistics (NCHS) in collaboration with the Bureau of Health Manpower, both of the Health Resources Administration of USDHEW. The statistics used in the following tables were adjusted by NCHS for the survey's non-response rate, and refer to podiatrists active in patient care. Since 99.5 percent of all active podiatrists in the United States are involved to some extent in patient care, and since most of the non-patient care activities such as teaching, research, or administration are conducted in association with a college of podiatric medicine, it is safe to assume that the statistics used here include virtually all of New England's active podiatrists.

One of the two critical features of the podiatric manpower situation in New England is the uneven distribution of active podiatrists throughout the region. The three northernmost states, with comparatively large geographic areas, are the location of only eight percent of the region's podiatric practices. However, because of the greater numbers of podiatrists in Connecticut and Massachusetts, the ratio of population per podiatrist for the region is lower, and therefore more favorable, than the total ratio for the United States. It should be noted that, for reasons cited at the end of the optometry section of this chapter, these ratios are presented for the purpose of comparisons, without evaluating their adequacy in terms of health care delivery.

The second critical feature is the age maldistribution among the region's podiatrists. In 1974, half of the active podiatrists were over 55 years of age, and, as in optometry and osteopathic medicine in New England, it can be assumed that the high percentage of older practitioners portends an accelerated withdrawal from active practice of the current pool of active podiatrists during the next 15 years.

PODIATRIC MANPOWER IN NEW ENGLAND

The data in Table III-15 indicate that, as a region, New England has a lower, more favorable, ratio of population per practitioner in the fields of podiatry and orthopedic surgery than does the United States. However, this regional ratio is somewhat misleading, since further examination of Table III-15 reveals that Maine, New Hampshire and Vermont have population to podiatrist ratios that are considerably higher than the U.S. ratio. In other words, these three states have relatively fewer podiatrists to serve their populations. Moreover, Maine and New Hampshire also had, in 1973, ratios of population per orthopedic surgeon that were higher (i.e., less favorable) than the overall U.S. ratio. Since 84 percent of the region's podiatrists, as well as 79 percent of the orthopedic surgeons, reside in Connecticut and Massachusetts, it appears that New England's ratios are lower than the U.S. ratios only by virtue of the presence of relatively large numbers of podiatrists and orthopedic surgeons in the region's two most populous states.

The physician data does not distinguish board-certified orthopedic surgeons from board-eligible and non-board-certified practitioners of orthopedic surgery. Twenty-two percent of the total number of 700 orthopedic surgeons in New England did not have office-based practices, but were involved in residency training or in teaching, research, or full-time hospital staff positions, and were less likely to be located in non-metropolitan areas of the region. Furthermore, orthopedic surgeons do not necessarily specialize in problems of the foot, although they are qualified to do so; thus, an exact number of physicians who are board-certified orthopedic surgeons and who actually specialize in foot disorders is not known.

The number of female podiatrists is quite small, both regionally and nationally, as seen in Table III-16. The percentage of women practicing podiatry in New England in 1974 was slightly higher than the percentage for the United States, 4.8 percent and 3.8 percent respectively. Because the proportion of female podiatrists is so low, it cannot be expected to change rapidly; but it could increase gradually if a greater number of women are graduated from colleges of podiatric medicine.

TABLE III-15
MANPOWER IN ORTHOPEDIC SURGERY AND PODIATRY, 1973 AND 1974

	CT	ME	MA	NH	RI	VT	Total N.E.	Total U.S.
1974 Estimated Population (numbers in 1,000s)	3,088	1,047	5,800	808	937	470	12,150	211,390
Active Podiatrists, 1974 ¹	173	19	346	23	53	7	621	7,085
Population per Podiatrist, 1974 ²	17,850	55,110	16,760	35,130	17,680	67,140	19,560	29,840
1973 Estimated Population (numbers in 1,000s)	3,076	1,028	5,818	791	973	464	12,151	209,851
Active Orthopedic Surgeons (M.D.) ³	181	33	371	34	55	26	700	9,631
Population per Orthopedic Surgeon, 1973 ²	16,990	31,150	15,680	23,260	17,690	17,850	17,360	21,790

¹Federal and non-federal podiatrists in patient care.

²Rounded to nearest ten.

³Non-federal only. There were four osteopathic board-certified orthopedic surgeons in New England in 1973, according to the 1974 AOA Directory of Osteopathic Physicians.

Sources: Current Population Reports, Series P-25, No. 539, "Population Estimates and Projections: Estimates of the Population of States, by Age: July 1, 1973 and 1974," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, January 1975).

1974 Survey of Podiatrists, National Center for Health Statistics, Health Resources Administration, USDHEW, preliminary data and unpublished data provided June 1975.

Current Population Reports, Series P-25, No. 520, "Population Estimates and Projections: Provisional Estimates of Resident Population of States, July 1, 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, July 1974).

Distribution of Physicians in the United States, 1973 (Chicago: American Medical Association, 1974).

TABLE III-16
MALE AND FEMALE ACTIVE PODIATRISTS, 1974

	CT	ME	MA	NH	RI	VT	Total N.E.	Total U.S.
Total Podiatrists in Patient Care	173	19	346	23	53	7	621	7,085
Male	164	17	330	21	53	6	591	6,814
Percent	94.8	89.5	95.4	91.3	100.0	85.7	95.2	96.2
Female	9	2	16	2	0	1	30	271
Percent	5.2	10.5	4.6	8.7	-	14.3	4.8	3.8

Source: 1974 Survey of Podiatrists, National Center for Health Statistics, Health Resources Administration, USDHEW, preliminary data and unpublished data provided June 1975.

GEOGRAPHICAL DISTRIBUTION OF PODIATRISTS IN NEW ENGLAND

The distribution of podiatrists by county in each New England state in 1974 appears in Tables III-17a through III-17f. Of a total of 67 counties, 23 counties are without podiatric practice, and another 13 counties each have only one active podiatrist in practice. The distribution of podiatrists by county thus differs substantially from the distribution of optometrists or osteopathic physicians, in that 84 percent of New England's active podiatrists are located in just two states while eight percent are spread out in three states - Maine, New Hampshire and Vermont - that have comparatively large geographic areas.

The caveat that accompanied the discussions of the geographic distribution of optometrists and osteopaths is applicable to the podiatric manpower situation as well. That is, while the distribution by county is a more detailed examination of a state's manpower than is the total number of practitioners, it does not present the entire picture; there are many other factors which determine or influence the adequacy of health care in a given area, whether it is a county, state or region. Even within that context, it is evident that in many areas of New England there is little or no access to podiatric care.

Further evidence of the lack of availability of podiatric care is provided by the U.S. Department of Health, Education, and Welfare (USDHEW), which has recently designated 29 of the 45 counties in Maine, New Hampshire, Rhode Island and Vermont as shortage areas having an unmet need for podiatrists' services. Certain areas within some counties in Connecticut were also so designated. A podiatrist who establishes practice in such an area is eligible for repayment of a portion of the educational loan made to cover the cost of a podiatric medical education.

In short, despite the fact that the region's overall ratio of population per podiatrist is lower than the average U.S. ratio, the distribution of podiatrists within New England is such that substantial geographic portions of four of the six states are recognized as having insufficient supply of podiatric services to meet the needs of their populations.

TABLE III-17a
DISTRIBUTION OF ACTIVE PODIATRISTS IN CONNECTICUT

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Podiatrists 1974</u>
Fairfield	787,800	56
Hartford	824,200	43
Litchfield	146,900	3
Middlesex	121,000	6
New Haven	756,800	53
New London	239,800	10
Tolland	110,900	1
Windham	88,300	1
Total	3,076,000	173

Sources: *Current Population Reports*, Series P-26, No. 79,
"Federal-State Cooperative Program for Population
Estimates: Estimates of the Population of
Connecticut Counties: July 1, 1972 and 1973," U.S.
Department of Commerce, Bureau of the Census
(Washington: Government Printing Office, August 1974).

1974 Survey of Podiatrists, National Center for
Health Statistics, Health Resources Administration,
USDHEW, preliminary data and unpublished data
provided June 1975.

TABLE III-17b
DISTRIBUTION OF ACTIVE PODIATRISTS IN MAINE

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Podiatrists 1974</u>
Androscoggin	93,300	3
Aroostook	94,800	0
Cumberland	197,200	9
Franklin	23,600	0
Hancock	37,000	1
Kennebec	98,300	2
Knox	31,100	1
Lincoln	21,600	0
Oxford	44,900	0
Penobscot	129,600	2
Piscataquis	16,400	0
Sagadahoc	24,900	0
Somerset	41,500	0
Waldo	25,500	0
Washington	31,200	0
York	117,600	0
Not Reported		<u>1</u>
Total	1,028,000	19

Sources: *Current Population Reports*, Series P-26, No. 59,
"Federal-State Cooperative Program for Population
Estimates: Estimates of the Population of Maine
Counties: July 1, 1972 and 1973," U.S. Department
of Commerce, Bureau of the Census (Washington:
Government Printing Office, March 1974).

1974 Survey of Podiatrists, National Center for
Health Statistics, Health Resources Administration,
USDHEW, preliminary data and unpublished data
provided June 1975.

TABLE III-17c
DISTRIBUTION OF ACTIVE PODIATRISTS IN MASSACHUSETTS

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Podiatrists 1974</u>
Barnstable	109,000	9
Berkshire	148,900	5
Bristol	461,300	16
Dukes	6,900	0
Essex	647,400	44
Franklin	60,900	1
Hampden	461,000	32
Hampshire	134,300	6
Middlesex	1,421,800	88
Nantucket	4,200	0
Norfolk	614,300	31
Plymouth	364,700	16
Suffolk	734,700	60
Worcester	648,900	36
Not Reported		2
Total	5,818,000	346

Sources: *Current Population Reports*, Series P-26, No. 91,
"Federal-State Cooperative Program for Population
Estimates: Estimates of the Population of
Massachusetts Counties and Metropolitan Areas:
July 1, 1972 and 1973," U.S. Department of Commerce,
Bureau of the Census (Washington: Government
Printing Office, October 1974).

1974 Survey of Podiatrists, National Center for
Health Statistics, Health Resources Administration,
USDHEW, preliminary data and unpublished data
provided June 1975.

TABLE III-17d
DISTRIBUTION OF ACTIVE PODIATRISTS IN NEW HAMPSHIRE

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Podiatrists 1974</u>
Belknap	34,800	1
Carrol	20,800	0
Cheshire	55,300	1
Coos	34,000	0
Grafton	57,900	2
Hillsborough	237,700	9
Merrimack	87,400	2
Rockingham	153,700	2
Strafford	77,200	2
Sullivan	31,900	2
Not Reported		2
Total	791,000	23

Sources: *Current Population Reports*, Series P-26, No. 52.
"Federal-State Cooperative Program for Population
Estimates: Estimates of the Population of New
Hampshire Counties and Metropolitan Areas:
July 1, 1972 and 1973," U.S. Department of Commerce,
Bureau of the Census (Washington: Government
Printing Office, January 1974).

1974 Survey of Podiatrists, National Center for
Health Statistics, Health Resources Administration,
USDHEW, preliminary data and unpublished data
provided June 1975.

TABLE III-17e
DISTRIBUTION OF ACTIVE PODIATRISTS IN RHODE ISLAND

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Podiatrists 1974</u>
Bristol	46,100	1
Kent	148,700	7
Newport	99,700	1
Providence	586,300	41
Washington	<u>92,200</u>	<u>3</u>
Total	973,000	53

Sources: *Current Population Reports*, Series P-26, No. 65, "Federal-State Cooperative Program for Population Estimates: Estimates of the Population of Rhode Island Counties and Metropolitan Areas: July 1, 1972 and 1973," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, April 1974).

1974 Survey of Podiatrists, National Center for Health Statistics, Health Resources Administration, USDHEW, preliminary data and unpublished data provided June 1975.

TABLE III-17f
DISTRIBUTION OF ACTIVE PODIATRISTS IN VERMONT

<u>County</u>	<u>Estimated Population 1973</u>	<u>Active Podiatrists 1974</u>
Addison	24,800	0
Bennington	28,800	0
Caledonia	24,000	1
Chittenden	105,700	0
Essex	5,700	0
Franklin	32,700	0
Grand Isle	3,900	0
Lamoille	14,200	0
Orange	19,100	0
Orleans	21,300	0
Rutland	54,700	1
Washington	48,300	1
Windham	35,100	1
Windsor	46,000	2
Not Reported		<u>1</u>
Total	464,000	7

Sources: *Current Population Reports*, Series P-26, No. 49,
"Federal-State Cooperative Program for Population
Estimates: Estimates of the Population of Vermont
Counties: July 1, 1972 and 1973," U.S. Department
of Commerce, Bureau of the Census (Washington:
Government Printing Office, January 1974).

1974 Survey of Podiatrists, National Center for
Health Statistics, Health Resources Administration,
USDHEW, preliminary data and unpublished data
provided June 1975.

TYPES OF PRACTICE

Almost 90 percent of the active podiatrists in New England in 1974 were solo practitioners, according to Table III-18, a percentage that is somewhat higher than the 80.7 percent of podiatrists in solo practice in the United States. The difference appears to be accounted for primarily in the percentages of partnership and group practices, categories that include 9.0 percent of New England's active podiatrists but 15.7 percent of all active podiatrists in the United States.

In New England, the highest percentages of solo practitioners are located in the three states that have the fewest active podiatrists, while the greatest diversity of types of practice is in Connecticut, Massachusetts and Rhode Island, where the number of podiatrists is larger and the population per podiatrist ratio is lower.

These statistics indicate a situation similar to that in optometry, and the same conclusion and forecast can be made: since an overwhelming majority of active podiatrists are solo practitioners, it is unlikely that a greater percentage of partnerships and group practices can be achieved in the immediate future. A change in proportions will occur only if new podiatric graduates can be attracted to modes of health care delivery other than solo private practice.

Table III-19, containing statistics on specialty areas within podiatric medicine, reveals that nearly nine out of ten active podiatrists in New England as well as nationwide are engaged in general practice. The percentage of podiatrists practicing in a specialty area, such as surgery or podogeriatrics, is generally higher in Connecticut and Massachusetts than in the other New England states. Overall, the region has a slightly larger proportion of podiatrists in general practice than does the U.S., and a smaller percentage of podiatrists specializing in surgery.

The predominance of podiatrists in solo practice and general practice in New England may very well be related to their thin geographical distribution, especially in Maine, New Hampshire and Vermont. The only practitioner in a county would find it impractical, if not impossible, to develop a practice limited to a specialty. However, another factor may be the age distribution of podiatrists in New England. National data for 1970 indicated greater diversities of types of practice and of specialty practice among younger podiatrists, and, as discussed in the next section of this chapter, the proportion of younger podiatrists in New England is smaller than in the rest of the country.

TABLE III-18
TYPE OF PODIATRIC PRACTICE BY STATE, 1974

	CT	ME	MA	NH	RI	VT	Total N.E.	Total U.S.
Solo Percent	138 79.8	19 100.0	321 92.8	22 95.6	50 94.3	7 100.0	557 89.7	5,719 80.7
Partnership Percent	35 20.2	0 -	14 4.0	0 -	3 5.7	0 -	52 8.4	950 13.4
Group Percent	0 -	0 -	4 1.2	0 -	0 -	0 -	4 0.6	167 2.3
Government Organizations ¹ Percent	0 -	0 -	2 0.6	0 -	0 -	0 -	2 0.3	120 1.7
Non-Government Organizations ² Percent	0 -	0 -	5 1.4	1 4.4	0 -	0 -	6 1.0	117 1.7
Other/ Not Reported Percent	0 -	0 -	0 -	0 -	0 -	0 -	0 -	12 0.2
Total Percent	173 100.0	19 100.0	346 100.0	23 100.0	53 100.0	7 100.0	621 100.0	7,085 100.0

¹Includes military.

²Includes those employed by another podiatrist.

Source: 1974 Survey of Podiatrists, National Center for Health Statistics, Health Resources Administration, USDHEW, preliminary data and unpublished data provided June 1975.

TABLE III-19
PODIATRIC SPECIALTY PRACTICE BY STATE, 1974

	CT	ME	MA	NH	RI	VT	Total N.E.	Total U.S.
General Practice	151	16	301	22	47	7	544	5,934
Percent	87.3	84.2	87.0	95.7	88.7	100.0	87.6	83.8
Surgery	8	1	12	1	3	0	25	776
Percent	4.6	5.3	3.5	4.3	5.6	-	4.0	10.9
Orthopedics or Biomechanics	11	2	20	0	2	0	35	247
Percent	6.4	10.5	5.8	-	3.8	-	5.6	3.5
Podogeriatrics	2	0	12	0	1	0	15	103
Percent	1.1	-	3.5	-	1.9	-	2.4	1.5
Other Activity	1	0	1	0	0	0	2	25
Percent	0.6	-	0.3	-	-	-	0.4	0.3
Total	173	19	346	23	53	7	621	7,085
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: 1974 Survey of Podiatrists, National Center for Health Statistics, Health Resources Administration, USDHEW, preliminary data and unpublished data provided June 1975.

AGE DISTRIBUTION OF ACTIVE PRACTITIONERS

In 1974, the mean or average age of active podiatrists in New England was 54 years, compared to the mean age of 49.7 years for all active podiatrists in the United States. The median age, or the age at which exactly 50 percent are older, was 54.9 years in New England and 50.6 years for the total United States. In none of the six New England states was a mean or median age lower than those of the United States total.

The age distribution for each New England state, the region, and the total United States is shown in Table III-20. It is immediately apparent that New England has a smaller percentage of active podiatrists in the three younger age groups than the rest of the United States, and a correspondingly higher percentage in the three older age groups. These differences are depicted in Figure III-9, which illustrates the age distribution by percent for New England, the non-New England states, and the United States total. For a comparison with the age distribution of physicians (M.D.) in the United States, refer to Figure III-8 in the section on osteopathy in this chapter.

Figure III-10 illustrates the age distribution of active podiatrists in New England in 1974 according to the total number in each age group, while Figure III-11 depicts the age distribution for each New England state. Differences among the states, in numbers and in distribution, are readily apparent in Figure III-11. Each state except Rhode Island has the largest number of podiatrists in the 50-59 age group, a proportion amounting to at least one-third of each state's active podiatrists. In Rhode Island the largest proportion is in the 60-69 age group.

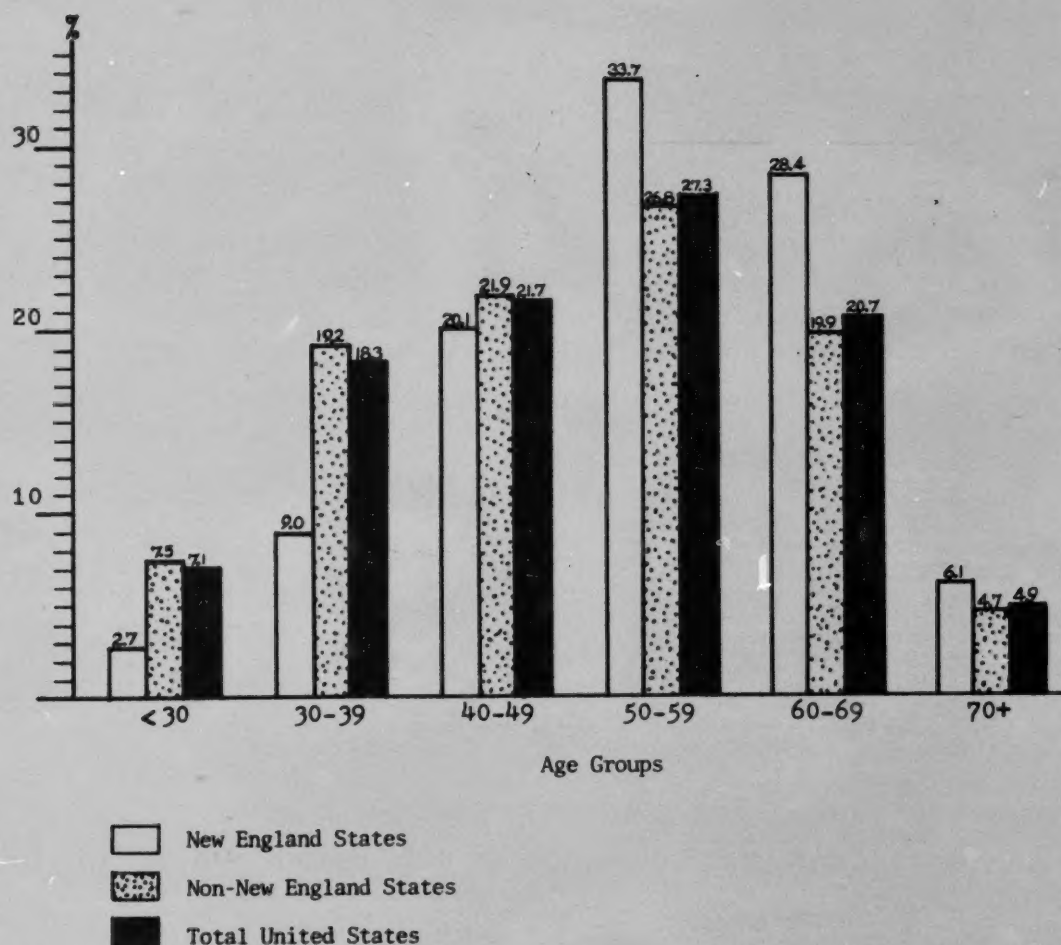
The age maldistribution of podiatrists in New England, similar to that of the region's osteopathic physicians, is such that the high percentage of podiatrists in the older age groups implies that a substantial proportion of the currently active podiatrists will soon withdraw from practice. This attrition resulting from retirement or death can only be counterbalanced by a sufficient input of new podiatrists into the region, especially into those areas in New England where their skills and services are urgently needed.

TABLE III-20
ACTIVE PODIATRISTS BY AGE AND STATE, 1974.

Age	CT	ME	MA	NH	RI	VT	Total N.E.	Non- N.E.	Total U.S.
Under 30	7	0	5	1	4	0	17	488	505
Percent	4.0	-	1.4	4.4	7.5	-	2.7	7.5	7.1
30-39	24	2	21	2	6	1	56	1,239	1,295
Percent	13.9	10.5	6.1	8.7	11.3	14.3	9.0	19.2	18.3
40-49	42	2	60	5	16	0	125	1,413	1,538
Percent	24.3	10.5	17.3	21.7	30.2	-	20.1	21.9	21.7
50-59	58	7	123	9	8	4	209	1,729	1,938
Percent	33.5	36.9	35.6	39.1	15.1	57.1	33.7	26.8	27.3
60-69	37	5	110	5	17	2	176	1,289	1,465
Percent	21.4	26.3	31.8	21.7	32.1	28.6	28.4	19.9	20.7
70 and over	5	3	27	1	2	0	38	306	344
Percent	2.9	15.8	7.8	4.4	3.8	-	6.1	4.7	4.9
Total	173	19	346	23	53	7	621	6,464	7,085
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
MEAN	50.9	57.2	55.9	52.4	51.1	54.5	54.0	49.3	49.7
MEDIAN	51.8	57.4	56.6	53.4	50.1	55.7	54.9	50.0	50.6

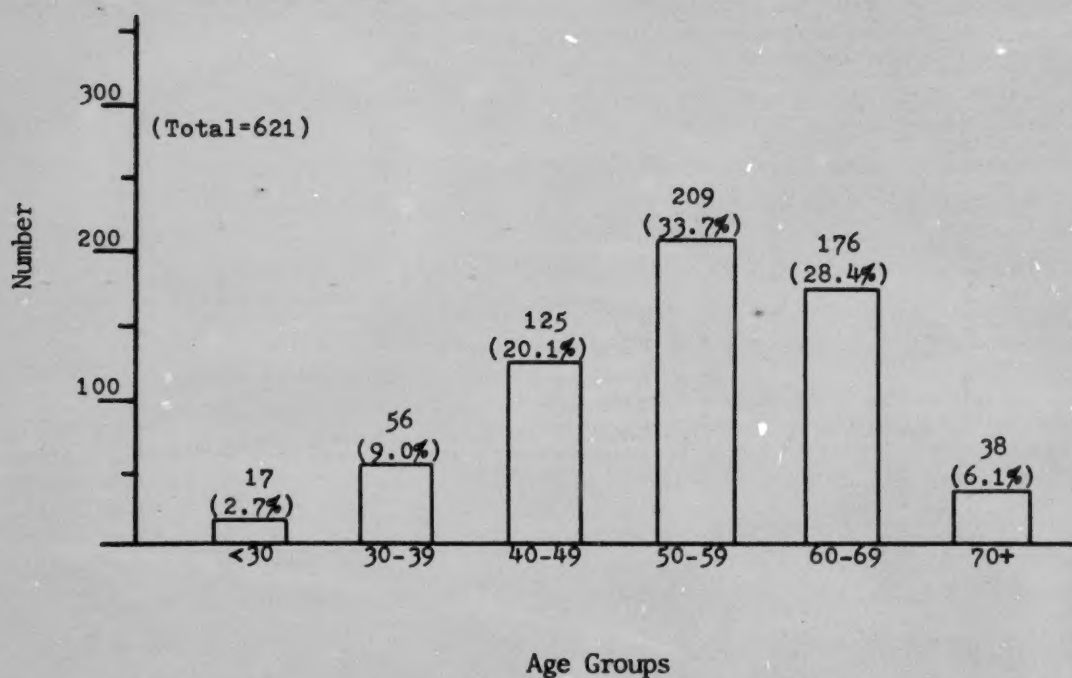
Source: 1974 Survey of Podiatrists, National Center for Health Statistics, Health Resources Administration, USDHEW, preliminary data and unpublished data provided June 1975.

FIGURE III-9
COMPARATIVE AGE DISTRIBUTIONS OF ACTIVE PODIATRISTS, 1974



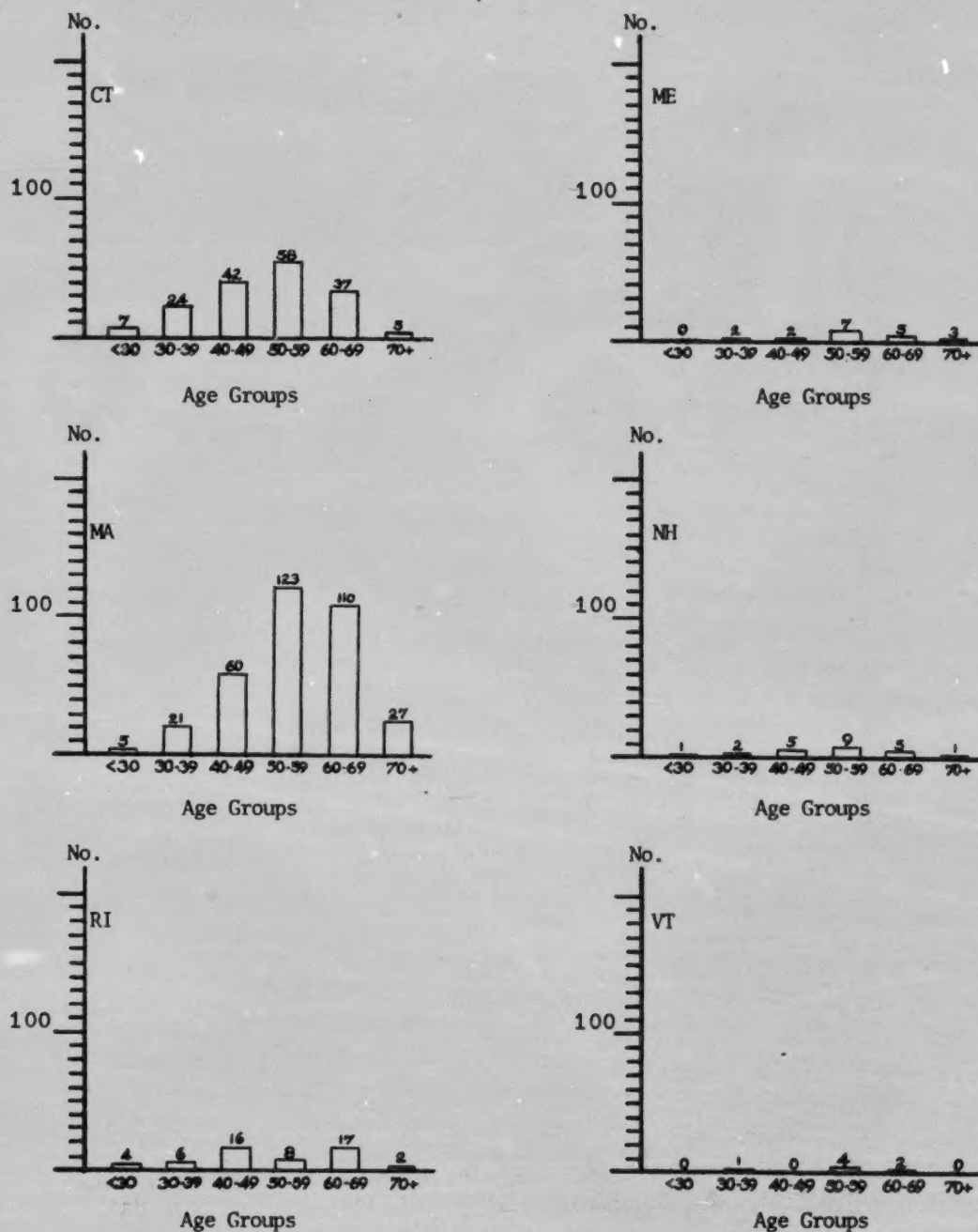
Source: 1974 Survey of Podiatrists, National Center for Health Statistics, Health Resources Administration, USDHEW, preliminary data and unpublished data provided June 1975.

FIGURE III-10
AGE DISTRIBUTION OF ACTIVE PODIATRISTS IN NEW ENGLAND, 1974



Source: 1974 Survey of Podiatrists, National Center for Health Statistics, Health Resources Administration, USDHEW, preliminary data and unpublished data provided June 1975.

FIGURE III-11
ACTIVE PODIATRISTS BY AGE, NEW ENGLAND STATES, 1974



Source: 1974 Survey of Podiatrists, National Center for Health Statistics, Health Resources Administration, USDHEW, preliminary data and unpublished data provided June 1975.

DEMAND FOR HEALTH CARE

The problems one confronts when trying to define, measure or project "adequate health care" have been discussed in the optometry section of this chapter. The individual influences and interactive effects of the many factors involved, as well as the intangible or elusive nature of some of them, have so far precluded definitive analysis. Nonetheless, two aspects of the podiatric data presented in this chapter - the geographical and age distributions within New England - indicate that there is an unmet need for podiatric services and that the total number of active podiatrists may soon decline if the number of new podiatrists entering the region does not equal the expected withdrawal of podiatric practitioners.

For example, of the 621 New England podiatrists who were in active practice in 1974, 435 (70 percent) will be age 65 or older by 1990, compared to 53.6 percent of those in the non-New England states. While it is true that not all of these 435 podiatrists will have retired from active practice, the loss will still be substantial. In contrast, only 42 percent of the 1973 pool of active and inactive M.D.'s will be age 65 or older in 1990. The national age imbalance in podiatry, like that in optometry, is the result of a postwar increase of graduates from the colleges of these health care professions.

The podiatric age imbalance in New England, like that in osteopathic medicine, appears to be the result of a decrease in the number of new practices being established by recent graduates of the colleges of podiatric medicine, since only 11.7 percent of New England's podiatrists are under age 40, compared with 26.7 percent of the podiatrists in the other 44 states. The current and future podiatric needs of New England can be met only if the expected loss of currently active practices is compensated by, at the very least, the establishment of an equal number of new practices, and if these new practices are more widely distributed throughout the region - particularly in the three northern states.

CHAPTER IV

DEMANDS FOR EDUCATION IN THE SELECTED HEALTH PROFESSIONS

Chapter III of this report described the present manpower distribution in this region for the professions of optometry, osteopathy and podiatry. In each profession, although at different rates, the age distribution indicates that those withdrawing from practice are doing so at a more rapid rate than those entering the professions. The factor of replacement is related in this chapter to the needs in New England for educational opportunities in these professions so that adequate manpower may be prepared to meet anticipated demands for good health care for the citizens in this six-state region.

OPTOMETRY

While the development of new schools of optometry and the expansion at some existing schools have increased the national capacity for optometric education, a number of factors have decreased the accessibility of an optometric education for many applicants. New England residents are finding it increasingly difficult to gain admission to an optometric college other than the Massachusetts College of Optometry (MCO). Two statistics indicate the magnitude of MCO's role with respect to optometric education for New England residents:

1. In the 1974-75 academic year, 65 percent of the New England residents attending colleges of optometry were enrolled at MCO.
2. Of the 1,308 active optometrists in New England in 1973, nearly 64 percent had received their optometric education at MCO.

The role of a college of optometry located in New England increases in importance when considered in the context of the impending attrition of currently active practitioners, the projected New England population increase, and the potentially increased demand for optometric services if national health insurance legislation is enacted.

FACTORS AFFECTING ENROLLMENT IN COLLEGES OF OPTOMETRY

At present there are 12 colleges of optometry in the United States, five of which are independent, free-standing institutions, including the Massachusetts College of Optometry (see Chapters I and VIII). The two most recently founded schools, in Alabama and New York, are affiliated with state university systems. The schools which are in the planning stages in Florida, Michigan and Missouri will also be affiliated with state universities.

It appears that most of the future expansion of optometric enrollment in the United States will take place through the creation of new colleges rather than through further expansion in existing colleges. In fact, some colleges are considering a reduction in their total enrollment in contrast to the increases which continued unabated during the last decade. For example, the Southern College of Optometry in Memphis, Tennessee, has received approval from its trustees to reduce gradually the size of its first-year class during the next few years, as new colleges of optometry are opened in the southern region. Any reductions at other colleges will be at the expense of openings for out-of-state students, regardless of the school's public or private status and undoubtedly, new colleges will give highest priority to applicants from within the home state.

Second priority will be accorded to those applicants from states which have arranged formal contracts with an optometric college, reserving a certain number of openings for qualified applicants from that state. This contract system, in which a state pays the school a fixed sum for each student enrolled in each class, is becoming more widespread. The Southern Regional Education Board (SREB), an interstate organization similar to the New England Board of Higher Education (NEBHE), is the administrative body for a system of contracts involving the three optometric colleges and 12 of the 14 states in the southern region.* Since the states of Alabama and Texas each have a state university-affiliated school of optometry, they do not contract for additional openings at other schools. Tables IV-1 and IV-2 present a detailed summary of the SREB states and colleges involved. States outside the southern region also participate in contracts for any remaining spaces at the colleges.

As a result of this formal and fiscal support for optometric education in some states and regions, third priority status is given to those applicants from states having no college and no contract arrangements, and even less priority is afforded those who apply from a non-contract state which *does* have its own college of optometry. In some cases, this lowest level of admissions consideration may extend to other states near a state having a school, especially if they form a recognizable region. From the point of view of an admissions office, the six New England states compose a region which is served by the Massachusetts College of Optometry, and applicants from New England will find it difficult to have their applications even considered at many of the colleges of optometry.

* The following states are members of the Southern Regional Education Board: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

TABLE IV-1
OPTOMETRY STUDENT QUOTAS IN SREB STATES, FALL 1974

Contracting State	College of Optometry	Entering Quotas	Total
Arkansas	Southern College of Optometry	12	13
	University of Houston	1	
Florida	Southern College of Optometry	15	20
	University of Houston	5	
Georgia	Southern College of Optometry	12	12
Kentucky	Southern College of Optometry	6	10
	University of Alabama	2	
	University of Houston	2	
Louisiana	Southern College of Optometry	7	12
	University of Alabama	1	
	University of Houston	4	
Maryland	Southern College of Optometry	5	5
Mississippi	Southern College of Optometry	8	10
	University of Alabama	1	
	University of Houston	1	
North Carolina	Southern College of Optometry	14	16
	University of Alabama	2	
South Carolina	Southern College of Optometry	8	10
	University of Alabama	2	
Tennessee	Southern College of Optometry	18	18
Virginia	Southern College of Optometry	3	5
	University of Alabama	2	
West Virginia	Southern College of Optometry	6	6
Total		137	137

Source: The Southern Regional Education Board, Atlanta, Georgia, data provided September 1974.

TABLE IV-2
STUDENT QUOTAS IN SREB COLLEGES OF OPTOMETRY, FALL 1974

College of Optometry	Contracting State	Entering Quotas	Total*
Southern College of Optometry	Arkansas	12	
	Florida	15	
	Georgia	12	
	Kentucky	6	
	Louisiana	7	
	Maryland	5	
	Mississippi	8	
	North Carolina	14	
	South Carolina	8	
	Tennessee	18	
	Virginia	3	
	West Virginia	6	114
University of Alabama	Kentucky	2	
	Louisiana	1	
	Mississippi	1	
	North Carolina	2	
	South Carolina	2	
	Virginia	2	10
University of Houston	Arkansas	1	
	Florida	5	
	Kentucky	2	
	Louisiana	4	
	Mississippi	1	13
Total		137	137

*Total SREB contract students.

Source: The Southern Regional Education Board, Atlanta, Georgia, data provided September 1974.

APPLICANTS FROM NEW ENGLAND

Data on the number of New England applicants to the colleges of optometry are neither readily available nor entirely consistent. One reason for this situation is that some schools will not even consider an application from a New England resident; the college of optometry at the University of Houston, for example, lists those states with which it has a formal contract arrangement and then cautions that "all other states are excluded at this time." Other schools discourage applicants from states having no contract arrangements by listing the order of admissions preferences - in-state, contract states, non-contract states - or advising the student to seek admission in his own region. Some examples from the most recent catalogs include the following:

It is suggested that your chances of selection are enhanced by applying to optometry colleges within your residence area.
(Pennsylvania College of Optometry)

This year we will continue accepting a greater number of applicants from other states with preference to those states having contractual agreements with our College. (Southern California College of Optometry)

...Most students admitted will be from Ohio. For non-Ohioans, priority in admissions will be given to applicants from states having contracts. (The Ohio State University College of Optometry)

Another factor that complicates admissions data is that for some optometry colleges located in universities, an applicant must first be qualified for entrance to the university, and only those applications surviving this first screening process are considered by the college of optometry. The University of California, Berkeley Campus, provides an example of this process in which it is impossible to determine the total number of applications submitted to the optometry college.

Despite these factors, it can be stated that all the health professions have seen increases in the number of applications to their schools during the past decade. The optometry colleges are receiving inquiries and applications in quantities many times the number that can be admitted to their first-year classes. At the Massachusetts College of Optometry, for example, the number of completed applications has increased from 185 in 1964 to 506 in 1974, and the ratio of completed applications to number of entering students during that period has been as high as eight to one. A large percentage of the applications to MCO are from residents of non-New England states, perhaps because the private, free-standing colleges of optometry that do not yet have an extensive contract system for their enrollment are the only schools to which many students may apply with any hope of acceptance. This situation increases the competition between applicants from the region in which the college is located and those from outside the region. An admissions officer must sometimes make a difficult decision between an extraordinarily qualified applicant from outside the college's region and a well-qualified candidate from within the region.

ENROLLMENT OF NEW ENGLAND STUDENTS IN COLLEGES OF OPTOMETRY

During the past ten years, the number of New England residents attending colleges of optometry has doubled. As seen in Table IV-3, the number of New England residents enrolled in U.S. optometry colleges has increased from 97 in 1964 to 203 in 1974. The increase in some New England states has been more steady than in others, but each state shows a net increase from 1964 to 1974. The total enrollment at all U.S. optometry colleges has more than doubled between 1964 and 1974, a period in which two new colleges of optometry were opened. The proportion of New England students to the total enrollment has declined from 6.9 percent in 1965 to 5.5 percent in 1974.

In the academic year 1974-75, almost two-thirds of the New England residents enrolled full-time in a college of optometry were attending the Massachusetts College of Optometry, as shown in Table IV-4a. Enrollment at the Pennsylvania College of Optometry (PCO) accounted for 17.1 percent of New England's optometric students, the second largest proportion. The remaining 17.2 percent were enrolled in nine of ten other optometry colleges in the United States, with one Massachusetts student attending the optometry school at the University of Waterloo in Ontario, Canada. It is significant that only ten New England residents, or 4.9 percent, were enrolled in the optometry colleges that are affiliated with public universities.

In the first column of Table IV-4b it can be seen that in 1974-75, only one *first-year* optometry student from New England was enrolled in a publicly supported college of optometry. The remaining 69 first-year students were enrolled in five of the six private optometry colleges, including 49 students (70 percent) at MCO and 14 students (20 percent) at PCO. Clearly, the newer colleges of optometry, which have been and continue to be founded in affiliation with publicly supported universities, cannot be looked upon as sources of optometric education for New England residents.

The changing admissions policies at many optometry colleges and the increasing proportion of contracted spaces, point to a future decrease in the number of New England residents enrolled in optometry schools outside the region. At the same time, the competition for admission to optometry schools nationally and within New England is increasing. It appears that the Massachusetts College of Optometry may become virtually the only optometry school to which New England's aspiring optometric students may gain admission.

TABLE IV-3
ENROLLMENT IN COLLEGES OF OPTOMETRY, 1964 - 1974

	Academic Year										
	64-65	65-66	66-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75
Number of U.S. colleges	10	10	10	10	10	11	11	12	12	12	12
Total enrollment all U.S. colleges	1,571	1,847	1,943	2,054	2,231	2,489	2,746	3,097	3,328	3,529	3,679
Enrollment of residents of:											
Connecticut	19	23	26	28	38	37	27	40	39	30	38
Maine	13	9	11	11	13	13	22	22	23	26	24
Massachusetts	50	76	68	78	75	90	73	88	97	92	111
New Hampshire	3	6	5	2	1	3	11	13	16	14	10
Rhode Island	9	5	10	10	8	6	11	12	15	18	12
Vermont	3	8	8	6	10	12	3	5	5	7	8
N.E. Total	97	127	128	135	145	161	147	180	195	187	203
N.E. Percent of Total	6.2	6.9	6.6	6.6	6.6	6.5	5.4	5.8	5.9	5.3	5.5

Source: The American Optometric Association and the Association of Schools and Colleges of Optometry, data provided March-June 1975.

TABLE IV-4a
ENROLLMENT OF RESIDENTS OF NEW ENGLAND STATES IN COLLEGES OF OPTOMETRY, 1974-75

Colleges	CT		ME		MA		NH		RI		VT		Total N.E.		Total U.S.	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
MCO	16	42.1	12	50.0	89	79.5	4	40.0	10	83.3	3	37.5	134	65.7	285	7.7
PCO	11	28.9	6	25.0	11	9.8	2	20.0	2	16.7	3	37.5	35	17.1	533	14.5
ICO	3	7.9	2	8.3	3	2.7	0	-	0	-	1	12.5	9	4.4	532	14.4
PU	0	-	1	4.2	2	1.8	2	20.0	0	-	0	-	5	2.4	294	8.0
SCOO	1	2.6	0	-	1	0.9	0	-	0	-	0	-	2	1.0	307	8.3
SCO	4	10.5	2	8.3	1	0.9	0	-	1	8.3	1	12.5	8	3.9	566	15.4
IU	1	2.6	0	-	1	0.9	0	-	0	-	0	-	2	1.0	266	7.2
SUNY	0	-	0	-	0	-	0	-	0	-	0	-	0	-	85	2.3
TOSU	1	2.6	1	4.2	0	-	0	-	0	-	0	-	2	1.0	218	5.9
UAB	1	2.6	0	-	0	-	0	-	0	-	0	-	1	0.5	98	2.7
UC	0	-	0	-	2	1.8	1	10.0	0	-	0	-	3	1.5	231	6.3
UH	0	-	0	-	1	0.9	1	10.0	0	-	0	-	2	1.0	264	7.2
UW	0	-	0	-	1	0.9	0	-	0	-	0	-	1	0.5	2	0.1
Total	38	100.0	24	100.0	112	100.0	10	100.0	12	100.0	8	100.0	204	100.0	3,681	100.0

KEY: MCO-Massachusetts College of Optometry
 PCO-Pennsylvania College of Optometry
 ICO-Illinois College of Optometry
 PU-Pacific University College of Optometry
 SCOO-Southern California College of Optometry
 SCO-Southern College of Optometry
 IU-Indiana University Division of Optometry
 SUNY-State University of New York, College of Optometry

TOSU-The Ohio State University College of Optometry
 UAB-University of Alabama, Birmingham, College of Optometry
 UC-University of California, Berkeley, College of Optometry
 UH-University of Houston College of Optometry
 UW-University of Waterloo (Ontario) College of Optometry

Source: 1974-75 Annual Survey of Optometric Educational Institutions, The American Optometric Association, data provided June 1975.

TABLE IV-4b
ENROLLMENT OF NEW ENGLAND RESIDENTS IN
COLLEGES OF OPTOMETRY BY CLASS, 1974-75

Colleges of Optometry	1st Year		2nd Year		3rd Year		4th Year		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
MCO	49	70.0	23	53.5	26	57.8	36	78.3	134	65.7
PCO	14	20.0	7	16.3	10	22.2	4	8.7	35	17.1
ICO	4	5.7	1	2.3	2	4.4	2	4.3	9	4.4
PU	1	1.4	3	7.0	0	-	1	2.2	5	2.4
SCCO	0	-	2	4.6	0	-	0	-	2	1.0
SCO	1	1.4	3	7.0	3	6.7	1	2.2	8	3.9
IU	0	-	1	2.3	1	2.2	0	-	2	1.0
SUNY	0	-	0	-	0	-	0	-	0	-
TOSO	0	-	0	-	1	2.2	1	2.2	2	1.0
UAB	0	-	1	2.3	0	-	0	-	1	0.5
UC	1	1.4	2	4.6	0	-	0	-	3	1.5
UH	0	-	0	-	1	2.2	1	2.2	2	1.0
UW	0	-	0	-	1	2.2	0	-	1	0.5
Total	70	100.0	43	100.0	45	100.0	46	100.0	204	100.0

KEY: MCO-Massachusetts College of Optometry
 PCO-Pennsylvania College of Optometry
 ICO-Illinois College of Optometry
 PU-Pacific University College of Optometry
 SCCO-Southern California College of Optometry
 SCO-Southern College of Optometry
 IU-Indiana University Division of Optometry
 SUNY-State University of New York, College of Optometry
 TOSU-The Ohio State University College of Optometry
 UAB-University of Alabama, Birmingham, College of Optometry
 UC-University of California, Berkeley, College of Optometry
 UH-University of Houston College of Optometry
 UW-University of Waterloo (Ontario) College of Optometry

Source: 1974-75 Annual Survey of Optometric Educational Institutions, The American Optometric Association, data provided June 1975.

OPTOMETRIC COLLEGES ATTENDED BY NEW ENGLAND PRACTITIONERS

According to Table IV-5, 63.7 percent of the active optometrists in New England as of 1973, had been graduated from the Massachusetts College of Optometry. Graduates of the Pennsylvania College of Optometry accounted for 18.1 percent of New England's active practitioners while eight other optometry colleges in the United States and the Canadian school in Waterloo had graduated 7.2 percent (the colleges in Alabama and New York were too new to be included in the OMRP survey). Approximately ten percent of the optometrists in New England had received their O.D. degree from schools which have either closed or merged with another institution (see Chapter I for historical developments).

In Connecticut and Vermont, more active optometrists are graduates of the Pennsylvania College of Optometry than of the Massachusetts College of Optometry. It should be noted, however, that of those optometrists in Connecticut who reported their year of graduation, 74 (72.5 percent) of the total number of PCO graduates received their degrees before 1960. Since 1960, there has been much less difference between the number of PCO graduates and the number of MCO graduates. Of the 58 active practitioners in Connecticut who graduated *since* 1960, 28 attended PCO and 22 attended MCO.

The source of optometric education for Vermont practitioners has undergone a more pronounced shift since 1960; of the 18 active optometrists who have graduated since 1960, eight received their degrees from MCO, while three graduated from PCO. The change in proportions in these two states is consistent with the increasingly regional admissions policies of most optometric colleges.

Figure IV-1 depicts the distribution of New England's active optometrists by year of graduation through 1969, which is very similar to the age distribution shown in Figure III-2. Of the 1,906 optometrists who reported their year of graduation 617 (56.3 percent) graduated in the 1940s and 1950s. The graph also depicts the proportions of graduates of MCO, PCO and other colleges, some of which have closed or merged. The percent of New England optometrists who graduated from MCO in the 1940s and 1950s is less than 60 percent for each period, increasing to 74.3 percent in the 1960s. The percentage of New England optometrists who graduated from PCO in the 1960s was lower than it had been in the 1940s and 1950s. Data for the 1970s are insufficient to be included.

SUMMARY

Residents of the New England states are finding it increasingly difficult to gain admission to, or even to have their applications considered by, a college of optometry other than the Massachusetts College of Optometry. The creation of new optometric colleges in other states will not relieve the difficulties for applicants from New England, since these new institutions are being established to meet the needs of the regions in which they will be situated.

Because two-thirds of the active optometrists in New England are graduates of MCO, it can be concluded that the presence of the college has enabled the region to attain a relatively low ratio of population per optometrist, compared to the rest of the United States. Data are not available with which to determine how many of the region's optometrists were not originally from a New England state, or how many New England residents have established practices outside the region. However, the Optometric Manpower Resources Project survey revealed that 74 percent of the graduates of MCO are practicing in New England, a statistic that is discussed in more detail in Chapter VI.

Minimizing the effects of the anticipated attrition of New England's currently active optometrists will not be possible without an optometric college located in this region, for it is unlikely that optometric graduates who are not originally from New England could be attracted to the region in sufficient numbers to compensate for the expected loss of practitioners. The high demand for optometric education has increased the importance of each college of optometry to its own state or region.

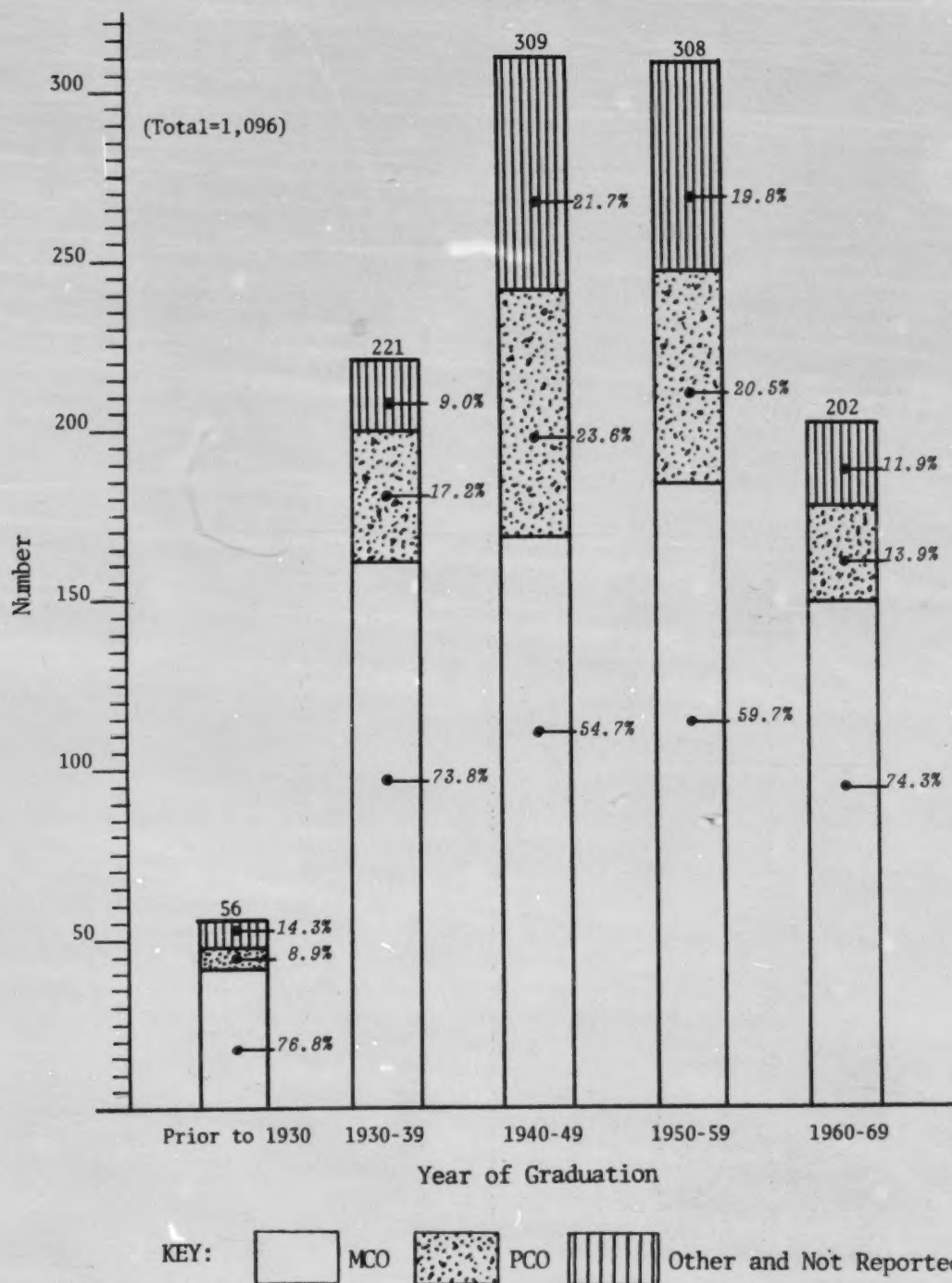
TABLE IV-5
ACTIVE OPTOMETRISTS IN NEW ENGLAND BY COLLEGE OF GRADUATION, 1973

Colleges of Optometry	CT	ME	MA	NH	RI	VT	Total N.E. No.	%
Massachusetts College of Optometry	68	81	550	44	77	13	833	63.7
Pennsylvania College of Optometry	107	11	79	8	18	14	237	18.1
Illinois College of Optometry	9	3	7	5	3	6	33	2.5
Pacific University College of Optometry	0	1	3	1	1	1	7	0.5
Southern California College of Optometry	3	1	0	0	2	0	6	0.5
Southern College of Optometry	1	1	5	0	3	1	11	0.9
Indiana University Division of Optometry	1	0	3	0	0	0	4	0.3
Ohio State University College of Optometry	7	3	8	3	2	2	25	1.9
University of California, Berkeley, School of Optometry	1	0	2	0	0	1	4	0.3
University of Houston College of Optometry	0	0	2	0	1	0	3	0.2
Other ¹	54	13	43	8	11	5	134	10.2
Not Reported	0	0	9	0	2	0	11	0.9
Total	251	114	711	69	120	43	1,308	100.0

¹Includes University of Waterloo School of Optometry, Ontario, Canada, and schools and colleges that no longer exist.

Source: Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

FIGURE IV-1
NEW ENGLAND ACTIVE OPTOMETRISTS BY YEAR OF GRADUATION, THROUGH 1969



Source: Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

OSTEOPATHY

There appears to be an increasing demand for osteopathic medical education in the United States. Two new colleges accepted their first classes in 1974-75 (see Chapters I and VIII), and the number of applications for admission to all of the colleges has increased substantially in the past five years. These increases in applications and enrollment are consistent with a nationwide increase in the number of undergraduate students who aspire to become physicians, either allopathic or osteopathic. Nationally, the number of osteopathic graduates has increased fairly steadily since 1948; with no postwar surge such as occurred in optometry and podiatry.

New England residents who seek an osteopathic medical education must go outside the region. While over half the present supply of active osteopathic physicians in New England were graduated before 1940, the number who graduated during the 1960s showed an increase over the preceding decade. It is possible that this increase is continuing into the 1970s, although the return of new osteopathic graduates into the region may be affected by an apparently insufficient number of opportunities for postgraduate internships and residencies within New England.

APPLICANTS FROM NEW ENGLAND

The American Association of Colleges of Osteopathic Medicine (AACOM) plans to implement a centralized, computerized application service for most of the colleges of osteopathic medicine, starting in 1975. It is expected that standardized and consistent information will then be available to meet the needs of the colleges, professional organizations, and state or regional health and education planning studies. However, for the present, application information specifically for the New England states is not available.

For the school years 1963-64 through 1970-71, the ratio of number of applicants per first-year enrollment increased nationally from 3.3 applicants per opening to 5.5 applicants per opening, with a high of 5.9 applicants per opening in 1969-70. For the 1970-71 academic year, 3,700 applicants submitted 4,305 applications; this is the only year for which both the number of applications and the number of applicants are available. From 1971-72 to the present, only the numbers of applications are available, rather than the numbers of applicants. The ratio of applications per first-year opening increased from 6.4 per opening in 1970-71, to 12.5 per opening in 1974-75. In those five years, the number of applications nearly tripled and the ratio of applications per opening nearly doubled. Although it cannot be determined whether each applicant is now submitting more applications than was the case in 1970-71, the data do seem to indicate that nationally during the past decade, there has been an increased interest in and demand for osteopathic medical education.

ENROLLMENT OF NEW ENGLAND STUDENTS IN COLLEGES OF OSTEOPATHIC MEDICINE

Table IV-6 contains the number of osteopathic students from each New England state since 1963-64, except for the year 1968-69 when this information was not reported. According to the table, the lowest total New England enrollment since 1963-64 occurred in 1966-67, and the enrollment has been increasing significantly since then. The percentage increase from 1966-67 to 1973-74 is 176 percent. By comparing the two five-year periods that are separated by the unreported year, it can be seen that for each state except Vermont, the average number of students per year increased from the first five-year period (1963-64 to 1967-68) to the second (1969-70 to 1973-74). For the total New England enrollment, the average number of students per year increased 67 percent from the first period to the second.

The total enrollment of New England residents in colleges of osteopathic medicine in 1973-74 was 53 students, or 1.9 percent of the total U.S. enrollment of 2,766. Table IV-7 also shows that 43 of the New England students (or 81.1 percent) were enrolled in three osteopathic colleges, those located in Kansas City, Kirksville and Philadelphia, with the largest number enrolled at the Philadelphia College of Osteopathic Medicine.

Table IV-8, which lists the osteopathic enrollment of New England residents in 1972-73 and 1973-74, shows that the total enrollment of students from New England in 1973-74 was 53, two more than in the previous year, and that first-year enrollment of students from this region increased by five. The number of residents of New England enrolled as first-year students in allopathic medical schools in 1973-74 was 624; of these 389 (62.3 percent) were enrolled in medical colleges located in New England. Complete data for allopathic medical college first-year enrollment of New England residents is shown in Table IV-9.

A majority of osteopathic students from New England did not attend a college or university located in this region for their undergraduate education. According to Table IV-10, a total of 24 students attended 18 New England colleges and universities prior to their enrollment in a college of osteopathic medicine. Since it is likely that not all of these 24 students were residents of New England, at least 29 of the 53 first-year osteopathic students from New England were undergraduates at an institution located outside the region. Unfortunately, as is the situation with optometrists, data are not available with which to study an osteopathic physician's migration from original state of residence to undergraduate college to osteopathic college to location of practice.

Previous studies have concluded that the best predictor of the location of a physician's practice is the location of the physician's residency program, although it is also argued that a physician chooses a residency program in an area in which he or she intends to establish a practice. There are five osteopathic hospitals in New England: three in Maine, and one each in Massachusetts and Rhode Island. In 1973, the osteopathic hospital in Rhode Island and one of the osteopathic hospitals in Maine offered a total of 11 internships and eight residencies. As

described in Chapter I, all osteopathic graduates are required to complete an internship program, and currently about 50 percent of all osteopathic graduates have been entering residency programs.

Unfortunately for New England, an insufficient number of osteopathic physicians who have completed these programs decide to practice in this region, and thus the total number of practitioners is receding. As previously noted, this trend is undoubtedly influenced by the paucity of osteopathic interns and residents in hospitals in this region. Although many hospitals approved by the American Medical Association (AMA) offer internships and certain residency programs to osteopathic graduates, there were in New England, as of September 1973, only three osteopathic graduates in AMA-approved internships and only five osteopathic graduates in AMA-approved residencies, out of a total of 795 internships and 3,613 residencies.

TABLE IV-6
ENROLLMENT IN COLLEGES OF OSTEOPATHIC MEDICINE BY
STATE OF RESIDENCE, 1963-64 - 1973-74

Academic Year	Number of Colleges	CT	ME	MA	NH	RI	VT	Total N.E.	Total U.S.*
1963-64	5	9	6	11	1	11	1	39	1,580
1964-65	5	9	6	10	0	9	2	36	1,643
1965-66	5	5	5	9	0	3	1	23	1,669
1966-67	5	4	4	8	0	3	1	20	1,750
1967-68	5	4	8	8	0	5	1	26	1,811
1968-69	5	[Information not available]							1,879**
1969-70	6	10	7	11	0	8	0	36	1,987
1970-71	7	13	9	17	1	9	0	49	2,140
1971-72	7	11	8	20	1	11	0	51	2,289
1972-73	7	8	7	21	4	11	0	51	2,564
1973-74	7	6	10	22	4	10	1	53	2,766

* Does not include foreign students.

** U.S. and foreign students combined.

Source: *Journal of the American Osteopathic Association Education Annals*, 1964 through 1974.

TABLE IV-7
ENROLLMENT IN U.S. COLLEGES OF OSTEOPATHIC MEDICINE, 1973-74

Class	CCOM	CCMS	KCCOM	College KCOM	MSUCOM	PCOM	TCOM	Total
Total U.S. Enrollment*	95 99 88 69 351	162 143 112 0 417	148 130 117 108 503	128 128 102 101 459	76 75 30 0 181	219 182 155 151 707	54 51 25 18 148	882 808 629 447 2,766
Total New England Enrollment	0 1 1 0 2	4 1 1 0 6	4 3 3 0 10	3 2 6 5 16	0 1 0 0 1	4 3 6 4 17	1 0 0 0 1	16 11 17 9 53
Percentage New England Enrollment	- 1.0 1.1 - 0.6	2.5 0.7 0.9 - 1.4	2.7 2.3 2.6 - 2.0	2.3 1.6 5.6 5.0 3.5	- 1.3 - - 0.6	1.8 1.6 3.9 2.6 2.4	1.8 - - - 0.7	1.8 1.4 2.7 2.0 1.9

KEY: CCOM-Chicago College of Osteopathic Medicine
 CCMS-College of Osteopathic Medicine and Surgery, Des Moines, Iowa
 KCCOM-Kansas City College of Osteopathic Medicine
 KCOM-Kirkville College of Osteopathic Medicine
 MSUCOM-Michigan State University College of Osteopathic Medicine
 PCOM-Philadelphia College of Osteopathic Medicine
 TCOM-Texas College of Osteopathic Medicine

*Does not include 14 students from foreign countries.

Source: *Journal of the American Osteopathic Association Education Annual*, Vol. 73 Supplement, 1974.

TABLE IV-8
ENROLLMENT OF NEW ENGLAND RESIDENTS IN COLLEGES OF OSTEOPATHIC MEDICINE, 1972-73 AND 1973-74

	CT		ME		MA		NH		RI		VT		Total N.E.		Total U.S.*	
Class	72-73	73-74	72-73	73-74	72-73	73-74	72-73	73-74	72-73	73-74	72-73	73-74	72-73	73-74	72-73	73-74
1st	1	2	1	4	4	7	2	0	3	2	0	1	11	16	805	882
2nd	2	1	2	0	8	4	0	3	4	3	0	0	16	11	645	808
3rd	1	2	4	2	6	9	2	0	2	4	0	0	15	17	587	629
4th	4	1	0	4	3	2	0	1	2	1	0	0	9	9	527	447
Total	8	6	7	10	21	22	4	4	11	10	0	1	51	53	2,564	2,766
College																
CCOM	1	0	0	0	2	2	0	0	0	0	0	0	3	2	329	351
COMS	2	0	0	0	5	5	1	0	0	0	0	1	8	6	443	417
KCCOM	2	2	1	3	3	3	1	1	2	1	0	0	9	10	483	503
KCOM	3	2	2	2	5	7	2	2	2	3	0	0	14	16	443	459
MSU-COM	0	0	0	0	1	0	0	1	0	0	0	0	1	1	148	181
PCOM	0	1	4	5	5	5	0	0	7	6	0	0	16	17	624	707
TCOM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	94	148

KEY: CCOM-Chicago College of Osteopathic Medicine
 COMS-College of Osteopathic Medicine and Surgery, Des Moines, Iowa
 KCCOM-Kansas City College of Osteopathic Medicine
 KCOM-Kirkville College of Osteopathic Medicine
 MSU-COM-Michigan State University College of Osteopathic Medicine
 PCOM-Philadelphia College of Osteopathic Medicine
 TCOM-Texas College of Osteopathic Medicine

* Does not include foreign students.

Source: *Journal of the American Osteopathic Association Education Annual*, Vol. 72 Supplement, 1973, and Vol. 73 Supplement, 1974.

TABLE IV-9
FIRST-YEAR ENROLLMENT IN ALLOPATHIC MEDICAL COLLEGES, 1973-74

	CT	ME	MA	NH	RI	VT	New England No.	% of Total	Non-N.E. No.	% of Total	Total Enrollment No.	%
U. Conn.	53	0	2	0	0	0	55	85.9	9	14.1	64	100.0
Yale U.	16	0	4	0	1	0	21	20.6	81	79.4	102	100.0
U. Mass.	0	0	40	0	0	0	40	100.0	0	-	40	100.0
Boston U.	6	0	47	2	4	0	59	46.8	67	53.2	126	100.0
Harvard U.	5	0	34	0	0	0	39	23.6	126	76.4	165	100.0
Tufts U.	11	2	35	0	2	0	50	34.2	96	65.8	146	100.0
Dartmouth U.	3	3	3	11	0	1	21	36.8	36	63.2	57	100.0
Brown U.	7	0	7	1	16	0	31	52.5	28	47.5	59	100.0
U. Vermont	1	11	22	1	3	35	73	87.9	10	12.1	83	100.0
Total N.E. Medical Colleges	102	16	194	15	26	36	389	46.2	453	53.8	842	100.0
Other U.S. Medical Colleges	94	11	105	9	11	5	235	1.8	12,776	98.2	13,011	100.0
Total	196	27	299	24	37	41	624	4.5	13,229	95.5	13,853	100.0
Percentage of Total in N.E. Medical Colleges	52.0	59.3	64.9	62.5	70.3	87.8	62.3		3.4		6.1	

Source: "Medical Education in the United States, 1973-1974," *Journal of the American Medical Association*, Vol. 231 Supplement, 1975.

TABLE IV-10
FIRST-YEAR OSTEOPATHIC STUDENTS IN 1973-74 BY
INSTITUTION OF UNDERGRADUATE OR GRADUATE TRAINING IN NEW ENGLAND

State and Institution	CCOM	COMS	KCCOM	KCOM	MSUCOM	PCOM	TCOM	Total
CONNECTICUT								
Trinity College						1		1
Yale University					1	2		3
Total	0	0	0	0	1	3	0	4
MAINE								
Unity College	1							1
U Maine-Orono			1					1
U Maine-Portland			2					2
Total	1	0	3	0	0	0	0	4
MASSACHUSETTS								
Boston University						1		1
Brandeis University					1	1		2
Emmanuel College						1		1
Massachusetts Institute of Technology					1			1
Northeastern University						2		2
Springfield College				1				1
Tufts University			1					1
U Mass./Amherst						1		1
U Mass./Boston			1					1
Total	0	0	2	1	2	6	0	11
NEW HAMPSHIRE								
Dartmouth College							1	1
Total	0	0	0	0	0	0	1	1
RHODE ISLAND								
Providence College				1		1		2
U Rhode Island/Kingston					1			1
Total	0	0	0	1	1	1	0	3
VERMONT								
Norwich University						1		1
Total	0	0	0	0	0	1	0	1
Grand Total	1	0	5	2	4	11	1	24

KEY: CCOM-Chicago College of Osteopathic Medicine
 COMS-College of Osteopathic Medicine and Surgery, Des Moines, IA
 KCCOM-Kansas City College of Osteopathic Medicine
 KCOM-Kirksville College of Osteopathic Medicine
 MSU-COM-Michigan State University College of Osteopathic Medicine
 PCOM-Philadelphia College of Osteopathic Medicine
 TCOM-Texas College of Osteopathic Medicine

Source: *Journal of the American Osteopathic Association Educational Annual*, Vol. 73 Supplement, 1974.

OSTEOPATHIC COLLEGES ATTENDED BY NEW ENGLAND PRACTITIONERS

Table IV-11 lists the osteopathic colleges from which the osteopathic physicians in New England as of 1973 were graduated. The Kirksville College of Osteopathic Medicine (KCOM) and the Philadelphia College of Osteopathic Medicine (PCOM) are the two institutions at which a total of 68 percent of the New England osteopathic physicians received their medical education. In Massachusetts, however, an almost equal proportion of practitioners was graduated from the Massachusetts College of Osteopathy, which closed in 1944, as was graduated from KCOM or PCOM. A total of 10.6 percent of New England's osteopathic physicians received their D.O. degree from this former college.

Table IV-12 reveals that 53.1 percent of the 509 osteopaths who were active in 1973 had graduated before 1940. The percentage declines during the next two decades until the period 1960-69, when it increased to 72 graduates, or 14.1 percent of the total. The number and percentage for "1970 and after" indicates that the number of younger graduates in New England may be increasing, although it is too early to make any definite conclusions. The distribution of years of graduation resembles the age distribution shown in Table III-5.

SUMMARY

The lack of an osteopathic medical college in New England has exerted an influence upon the osteopathic manpower situation in this region, in that the input of new osteopathic graduates has declined and an age maldistribution has resulted. Recently, the number of New England residents attending osteopathic colleges has increased, and the number of applications from throughout the United States to the nine osteopathic colleges has climbed sharply. Three New England states do not have an osteopathic hospital, however, and only two of the five osteopathic hospitals in New England offered AOA-approved internship and residency programs in 1973. Despite the fact that AMA-approved internships and certain residencies may be offered to osteopathic physicians, very few osteopathic physicians were serving in such programs in 1973.

The net effect of the circumstances surrounding New England's osteopathic situation is that although the enrollment of New England students in the colleges of osteopathic medicine has recently increased, the lack of an osteopathic college located in New England and the limited postgraduate opportunities for the osteopathic graduates who wish to return to the region may preclude an input of new osteopathic physicians sufficient to compensate for the expected loss of active practitioners through attrition during the next 15 years. The most significant impact of this loss would be felt in the number and distribution of general practitioners in the region.

TABLE IV-11
ACTIVE NON-FEDERAL OSTEOPATHIC PHYSICIANS IN NEW ENGLAND
BY COLLEGE OF GRADUATION, 1973

Colleges	CT	ME	MA	NH	RI	VT	Total New England	
							No.	%
CCOM	1	6	10	0	5	0	22	4.3
COMS	0	12	6	1	4	2	25	4.9
KCCOM	2	20	9	2	6	3	42	8.3
KCOM	6	95	44	9	17	13	184	36.2
MSU-COM	2	1	0	0	0	0	3	0.6
PCOM	25	43	46	0	44	4	162	31.8
TCOM	0	0	0	0	0	0	0	-
Massachusetts College of Osteopathy*	0	5	41	2	1	5	54	10.6
All Other	4	5	2	0	2	4	17	3.3
Total	40	187	158	14	79	31	509	100.0

KEY: CCOM-Chicago College of Osteopathic Medicine
 COMS-College of Osteopathic Medicine and Surgery, Des Moines, IA
 KCCOM-Kansas City College of Osteopathic Medicine
 KCOM-Kirksville College of Osteopathic Medicine
 MSU-COM-Michigan State University College of Osteopathic Medicine
 PCOM-Philadelphia College of Osteopathic Medicine
 TCOM-Texas College of Osteopathic Medicine

*Boston, Massachusetts, closed in 1944.

Source: 1974 Yearbook and Directory of Osteopathic Physicians (Chicago:
 American Osteopathic Association, January 1974.)

TABLE IV-12
ACTIVE NON-FEDERAL OSTEOPATHIC PHYSICIANS IN NEW ENGLAND
BY YEAR OF GRADUATION, 1973

Year of Graduation	CT	ME	MA	NH	RI	VT	Total N.E.
Before 1930	14	17	38	4	8	9	90
Percent	35.0	9.1	24.0	28.6	10.1	29.0	17.7
1930-1939	16	64	59	6	24	11	180
Percent	40.0	34.2	37.3	42.9	30.4	35.5	35.4
1940-1949	7	34	27	3	5	5	81
Percent	17.5	18.2	17.1	21.4	6.3	16.1	15.9
1950-1959	0	22	15	1	13	0	51
Percent	-	11.8	9.5	7.1	16.5	-	10.0
1960-1969	0	32	14	0	22	4	72
Percent	-	17.1	8.9	-	27.8	12.9	14.1
1970 and after	3	18	5	0	7	2	35
Percent	7.5	9.6	3.2	-	8.9	6.5	6.9
Total	40	187	158	14	79	31	509
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: 1974 Yearbook and Directory of Osteopathic Physicians (Chicago: American Osteopathic Association, January 1974).

PODIATRY

Colleges of podiatry or chiropody did exist in New England at various times in the past as described in Chapters I and VIII, and 34.4 percent of the presently active podiatrists in the region received their podiatric education at those institutions which have since closed. Another 21.5 percent graduated from other podiatric colleges that also have closed, which were not located in New England. Thus, fewer than 45 percent of New England's podiatrists have been graduated from the five currently operating colleges of podiatric medicine. The number of the region's podiatrists who were graduated in the 1960s is less than one-third of the number who were graduated in the 1950s.

Both statistics indicate that new podiatric practices are being established in New England at a rate much lower than that which existed when podiatric educational facilities were located in the region. To put this conclusion in perspective, it should be noted that during the past 11 years, 1964-65 through 1974-75, the total enrollment at the five podiatric colleges increased by 197 percent, and first-year enrollment increased by 217 percent. A high demand for podiatric medical education could create a situation similar to that in optometric education, in which regional and financial factors lead to admissions priorities based upon the applicant's state of residence.

APPLICATIONS TO COLLEGES OF PODIATRIC MEDICINE

Table IV-13, which lists the number of applicants to each of the five colleges of podiatric medicine for the last five academic years, shows that the total number of applications has more than tripled during this period. For each college, the numbers in Table IV-13 may be considered to be the number of applicants, although the "total" for each year is more accurately interpreted as the total number of applications, since an unknown number of applicants submit applications to more than one school. Therefore, a certain amount of the increase is probably accounted for by an increase in the number of colleges to which any one student applies. That qualification notwithstanding, the competition for admission has still intensified significantly.

For example, in 1970 there were 888 applications for 353 first-year openings (see Table IV-14), or 2.5 applications per opening. For the current school year 1974-75, 3,081 applications were submitted for a first-year enrollment of 561, a ratio of 5.5 applications per opening.

Unfortunately, an analysis of the applicants by their state of residence is not available, so the extent to which New England residents have participated in the increase in applications for a podiatric medical education cannot be determined. The enrollment of New England students, presented later in this chapter, does not show a conclusive trend, ratios of acceptance or rejection of New England applicants cannot be calculated.

TABLE IV-13
NUMBER OF APPLICANTS TO THE COLLEGES OF
PODIATRIC MEDICINE, 1970-71 - 1974-75

Colleges	<u>Academic Year</u>				
	1970-71	1971-72	1972-73	1973-74	1974-75
California CPM	170	180	250	530	618
Illinois CPM	166	196	294	764	673
New York CPM	104	125	285	278	543
Ohio CPM	260	255	362	387	600
Pennsylvania CPM	188	190	322	504	647
Total	888	946	1,503	2,463	3,081

Note: The number of applicants who applied each year to more than one college is not known.

Source: American Association of Colleges of Podiatric Medicine,
unpublished data provided April 1975.

ENROLLMENT OF NEW ENGLAND RESIDENTS IN COLLEGES OF PODIATRIC MEDICINE

Table IV-14, which lists the enrollment of first-year students from New England in the five colleges of podiatric medicine from 1970-71 through 1974-75, presents a rather mixed picture. For the region, the number of first-year students declined from 1970-71 to 1973-74 and then almost tripled in the next year, 1974-75. Most of the increase occurred in Connecticut and Massachusetts, since all but two of the 32 first-year students were from those two states. The number of first-year students from each of the other four New England states fluctuated between none and two, in no apparent pattern. The data, therefore, do not reveal any clear trends during this five-year period.

During the same period, the first-year enrollment total for all five colleges steadily increased from 353 to 561 students. The proportion of first-year students from New England decreased until the academic year 1974-75, for which the 5.7 percent of first-year students who are from New England is the largest percentage for the past five years.

In Table IV-15, it can be seen that in 1974-75 there were 32 first-year and 64 total students from New England pursuing a podiatric medical education. More students were from Massachusetts than any other state in the region, and the largest number of New England students were enrolled at the Illinois College of Podiatric Medicine, which also has the largest total enrollment of the five colleges.

In short, although there has been a net increase in the number of first-year podiatric students from New England in the past five academic years, all of the increase occurred in 1974-75, and 30 of the 32 first-year students were from the two states that, in 1974, had the greatest number of active podiatrists in the region and the most favorable ratios of population per podiatrist.

TABLE IV-14
FIRST-YEAR ENROLLMENT IN COLLEGES OF PODIATRIC MEDICINE BY
STATE OF RESIDENCE, 1970 - 1974

Academic Year	CT	ME	MA	NH	RI	VT	Total N.E.	Total U.S.
1970-71	2	1	9	1	1	1	15	353
1971-72	2	2	7	1	2	0	14	399
1972-73	4	1	6	0	2	0	13	477
1973-74	3	1	5	1	1	0	11	551
1974-75	11	0	19	0	1	1	32	561

Source: American Association of Colleges of Podiatric Medicine,
unpublished data provided April 1975.

TABLE IV-15
ENROLLMENT IN COLLEGES OF PODIATRIC MEDICINE BY
STATE OF RESIDENCE, 1974-75

Colleges	Enrollment	CT	ME	MA	NH	RI	VT	Total N.E.	Total U.S.
California CPM	1st year			2				2	89
	Total	2		2				4	305
Illinois CPM	1st year	6		5				11	163
	Total	7	1	9	2	2		21	490
New York CPM	1st year			2			1	3	68
	Total	2		3			1	6	241
Ohio CPM	1st year	3		3				6	125
	Total	4	3	7			1	15	469
Pennsylvania CPM	1st year	2		7		1		10	116
	Total	4	1	11		2		18	332
All Colleges	1st year	11	0	19	0	1	1	32	561
	Total	19	5	32	2	4	2	64	1,837

Source: American Association of Colleges of Podiatric Medicine,
unpublished data provided April 1975.

PODIATRIC COLLEGES ATTENDED BY NEW ENGLAND PRACTITIONERS

The distribution of the colleges of podiatric medicine according to the number of New England podiatrists who received their professional degree from each, as shown in Table IV-16, demonstrates the decrease in input of new podiatrists into the region following the closing of the colleges of podiatry previously located in the region. Fifty-six percent of the podiatrists who were actively practicing in New England in 1974 had been graduated from institutions that no longer exist. The three former institutions that were situated in New England were the source of the podiatric education for 34.4 percent of the region's podiatrists. Of the five colleges of podiatric medicine in operation in 1974, the Ohio College of Podiatric Medicine had graduated the largest number of podiatrists who were practicing in New England (106), and the colleges in Illinois and New York had graduated all but 20 of the 167 graduates of the other four existing colleges.

It should be noted that the distribution is not identical in each state. For example, more than three-quarters of Connecticut's podiatrists were graduated from the five existing colleges, and most of the rest received their degrees from the college formerly associated with Temple University in Philadelphia. On the other hand, more than half of Massachusetts' podiatrists received their degree from the two institutions that once were in operation in Massachusetts, and a total of 74.3 percent were graduated from all five former institutions.

Data for the year of graduation of the region's podiatrists, shown in Table IV-17, indicate that 57.8 percent were graduated between 1930 and 1949, and another 25.8 percent received their degrees during the 1950s. Only one-third as many of New England's active podiatrists were graduated in the 1960s as in the 1950s. Practices have been established in the region by podiatrists who were graduated in the early 1970s, but it is not possible to determine at this time whether the number eventually will exceed that of the 1960s. Changes in admissions policies at the podiatric medical colleges, due to regional considerations or contract arrangements, could affect the number of matriculants who are from New England.

The data in Tables IV-16 and IV-17 are consistent with the age distribution data for New England podiatrists discussed in Chapter III. The large percentages in New England of graduates of colleges that closed between 13 and 40 years ago and of podiatrists who were graduated in the 1930s and 1940s, correlate with the age maldistribution of active podiatrists in the region illustrated in Figure III-9.

TABLE IV-16
ACTIVE PODIATRISTS IN NEW ENGLAND BY COLLEGE OF GRADUATION, 1974

Colleges	CT	ME	MA	NH	RI	VT	Total N.E. No.	%
California College of Podiatric Medicine*	2	0	4	0	0	0	6	1.0
Illinois College of Podiatric Medicine*	40	1	16	6	8	2	73	11.8
New York College of Podiatric Medicine*	59	0	13	1	1	0	74	11.9
Ohio College of Podiatric Medicine*	30	6	52	5	9	4	106	17.1
Pennsylvania College of Podiatric Medicine*	5	0	4	0	5	0	14	2.3
Chicago College of Chiropody (closed 1962)	8	2	3	1	6	1	21	3.4
Temple University School of Chiropody (closed 1961)	28	2	59	7	13	0	109	17.5
Beacon Institute/ Massachusetts School of Chiropody (closed 1950s)	0	1	117	0	0	0	118	19.0
Middlesex College School of Chiropody (closed 1942)	0	6	77	3	3	0	89	14.3
New England (Rhode Island) College of Chiropody (closed 1930s)	0	0	0	0	7	0	7	1.1
Others	1	1	1	0	1	0	4	0.6
Total	173	19	346	23	53	7	621	100.0

*Includes all former names of the same institution.

Source: 1974 Survey of Podiatrists, National Center for Health Statistics, Health Resources Administration, USDHEW, preliminary data and unpublished data provided June 1975.

TABLE IV-17
ACTIVE PODIATRISTS IN NEW ENGLAND BY YEAR OF GRADUATION, 1974

Year of Graduation	CT	ME	MA	NH	RI	VT	Total N.E.
Before 1920	3	0	0	0	1	0	4
Percent	1.7	-	-	-	1.9	-	0.6
1920-1929	3	2	16	0	1	0	22
Percent	1.7	10.5	4.6	-	1.9	-	3.6
1930-1939	46	5	97	8	11	3	170
Percent	26.6	26.3	28.0	34.8	20.8	42.9	27.4
1940-1949	37	7	123	6	13	3	189
Percent	21.4	36.8	35.6	26.1	24.5	42.9	30.4
1950-1959	46	3	87	7	17	0	160
Percent	26.6	15.8	25.2	30.4	32.1	-	25.8
1960-1969	29	1	15	1	6	1	53
Percent	16.8	5.3	4.3	4.3	11.3	14.3	8.5
1970-1973	9	1	8	1	4	0	23
Percent	5.2	5.3	2.3	4.3	7.5	-	3.7
Total	173	19	346	23	53	7	621
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: 1974 Survey of Podiatrists, National Center for Health Statistics, Health Resources Administration, USDHEW, preliminary data and unpublished data provided June 1975.

SUMMARY

The continued input of new podiatrists, in numbers sufficient to compensate for the future attrition of those practitioners currently in the older age groups, is essential to the delivery of podiatric medical care throughout the region. However, it is possible that factors such as the overall increase in demand for podiatric medical education, the impact of the national economic situation upon educational institutions, and the expanding use of contracts between states and health professional colleges to provide financial support and to secure openings for a state's residents, may bring about an admissions selection situation in podiatric education similar to that in optometric education. That is, unless a state financially participates in podiatric medical education, its residents might find their admissions opportunities increasingly limited. In New England, that circumstance would only exacerbate and prolong the effects of the net loss of active podiatrists that is likely to occur in the near future.

COORDINATED OPERATIONS OF COLLEGES FOR SEVERAL PROFESSIONS

From reading the brief histories of the professions of optometry, osteopathy and podiatry, as presented in Chapter I of this report, and then noting the past strained relationships on the part of each of these professions with allopathic medicine, as described in Chapter II, one becomes aware of the need for much closer cooperation among all the health professions. Various attempts are being undertaken to improve understanding and cooperation among many types of health professionals. The program initiated by the Pennsylvania College of Podiatric Medicine is an example.

PHILADELPHIA INTERDISCIPLINARY HEALTH AND EDUCATION PROGRAM

With funds provided by the U.S. Public Health Service, the Philadelphia Interdisciplinary Health and Education Program (PHIHEP) was established in 1972-73 to "develop multiple and effective use of existing facilities, faculties, and curriculum programs and educational programs among the disciplines for interdisciplinary and team health care delivery purposes." In this program emphasis is placed on the team approach in which members of the various health professions cooperatively and concurrently, as the conditions require, deliver health care. This is in contrast to earlier traditions in which "we have been educating students as though most of them were to be solo practitioners, essentially cut off from the mainstream of new health education and knowledge, and from the other disciplines capable of providing health care.

To counteract this traditional approach, PHIHEP has involved students from at least a dozen different health professions and seven different independent institutions in common learning environments, clinics and colloquia. The seven institutions participating in this program are the Medical College of Pennsylvania, Pennsylvania College of Optometry, Philadelphia College of Osteopathic Medicine, Philadelphia College of Pharmacy and Science, Pennsylvania College of Podiatric Medicine, Temple University (health records and administration, medical technology, occupational therapy, pharmacy and physical therapy), and the University of Pennsylvania (dental medicine, nursing and social work).

Interdisciplinary Education, a 1973 report which describes the goals of PHIHEP, states:

Interdisciplinary education involves students from the various health education disciplines who are enrolled in courses which are common to their professional preparation. This process tends to break down the isolation which has traditionally earmarked the education of the specialist from one health segment of the healing arts to the other. It helps students to know one another, share intellectual stimulation, and plan organized units of work upon which they can work together. The concurrent values of this

experience involve basic behavioral changes in attitude and comprehension of one another which could have far-reaching effects in the health care delivery fields.

This program appears to be especially well suited to a metropolitan area such as Philadelphia, where a number of educational institutions, many with long histories and traditions of independence, are located, even though some are situated a considerable distance geographically from others. Although this program has been in operation for too short a time to permit adequate evaluation of its influence, it does appear to provide a most constructive approach where there are separate colleges of optometry, osteopathy and podiatry, for example, and where there appears to be little disposition on their part or on the part of the universities to combine them into academic health centers.

ACADEMIC HEALTH CENTERS

Another approach to the need for increased interdisciplinary education of health professional personnel is through the establishment of academic health centers which have been increasing in number throughout the nation rather rapidly in the past decade. An academic health center, usually as part of a university, combines several professional schools such as dentistry, medicine, and nursing, and one or more of the several dozen allied medical professions, such as medical technology, physical therapy, radiologic technology, and so on. One goal of the innovative academic health center is to provide students with considerable exposure to the academic and clinical learning processes of students in other health professions.

To succeed in meeting the primary purpose of an academic health center - to educate students in the various health professions so that they understand the contributions to the delivery of health care that each profession can make and to encourage cooperation among these future health professionals - necessitates more than a simple administrative centralization. In his report to the Association of American Medical Colleges in 1965, *Planning for Medical Progress through Education*, Lowell T. Coggeshall, M.D., identified the following advantages of an academic health center:

The scope of the educational program can be better for each discipline because of the ready availability of qualified teachers on a wide variety of health topics.

The scope and quality of research is enhanced by the presence of this assembly of faculty.

The scope and quality of patient care are benefited, and a referral center for patients for diagnostic and treatment problems results.

Students in the several health disciplines can learn to understand and respect the contributions which other health professions can give, and the health team which is so important at the community level can be started in the educational setting.

There are economies in the use of common facilities and services - for example, the library, extension department, and computer center.

In some ways, the various disciplines stimulate each other to higher accomplishments.

Demonstrations of excellence or "models" can be provided to lead others to improve ways in which medicine is practiced and comprehensive health care provided.

OPTOMETRY IN ACADEMIC HEALTH CENTERS

As described in Chapter I, there are at present 12 colleges of optometry in the United States, of which five are independent and seven are parts of universities, plus three other schools authorized to be established as parts of universities in the states of Florida, Michigan and Missouri. It is interesting and regrettable to note that of these 15, only one can truly be classified as a part of an academic health center. This college is located at the University of Alabama in Birmingham, which was established in 1969 and graduated its first, or pilot, class in 1973.

Despite some opposition on the part of ophthalmologists to the development of this school of optometry at the University of Alabama, it is considered by many to represent the most significant development in optometric education in many years. Its success to date is the result of a combination of factors: a mandate from the Alabama legislature to establish such a school; a central administration that gave support to the project and to the concept of educating students in the health professions for team practice; a medical director of the academic health center who acted as an advocate for the school; the appointment of a dean with outstanding professional qualities and leadership capabilities; and financial support, including funds for construction and other purposes from the federal and state governments.

It should be noted, in contrast, that a publicly financed school of optometry was recently established in another state and that it is free-standing partially because of opposition by ophthalmologists to its inclusion in an academic health center of the state system of higher education. At the time, some members of the optometric profession were fearful that a school of optometry in an academic health center would lose its identity as a school for an independent profession and be dominated by a medical school.

Some features of the University of Alabama at Birmingham should be identified. In addition to optometry, the institution offers education in dentistry, medicine, nursing and also has schools of community and allied health resources, natural sciences and mathematics, and social and behavioral sciences, as well as a school of graduate studies. Through this last school, Ph.D. degrees are offered in physiological optics.

To be constructively effective in the delivery of health care, optometry must have reciprocal access to medicine, including the specialties of gerontology, neurology, ophthalmology, pediatrics, psychiatry, internal medicine, and general practice, as well as other professions of dentistry, education, psychology, safety engineering and social work. To lay the groundwork for such reciprocal relationships, the University of Alabama offers the most integrated program of any school of optometry. In the words of its Dean, Henry B. Peters:

We have available to us magnificent basic health sciences departments, the same departments, faculty and facilities, that serve the medical and dental schools. The optometry students take courses frequently with other health professional students, in anatomy, histology, neuro-anatomy, physiology, biochemistry, microbiology, pharmacology and systemic pathology in these departments.

The School of Medicine faculty teach optometry students public health and epidemiology, ocular pathology, clinical medicine for optometrists, and clinical pathology.

Our own faculty teach remarkably effective courses in physiological optics, physical and geometric optics, optometric theory and practice. Frequently, we have students from other programs, often graduate students, taking selected courses in our curriculum for their own purposes.

Optometric students at the University of Alabama also have the benefit of programs in affiliated clinics in hospitals and in clinics on the campus and in the community. These include the Diabetes Research and Education Hospital, the Veterans Administration Hospital, for which the Dean of the School of Optometry serves as a member of the Deans Committee, the Vision Functions Laboratory of the Center for Development and Learning Disorders, and the Special Technical Facility for the Deaf and Blind.

Alabama has provided excellent support for optometry and has given tangible recognition to Dean Peter's observation that "vision problems within the scope of optometry are the second most prevalent chronic health problem in our population; and among the public's health concerns, vision problems rate just after their concern for cancer." The program has been in existence for only a few years. Within this period of time, it has become a center where patients are referred for difficult eye problems, where continuing education is provided for optometrists, and where basic and applied vision research is conducted. It would appear that optometry in such an environment can make significant teaching, research and service contributions for the improved delivery of health care and for the benefits of other health professions concentrated in the academic health center.

POLICY STATEMENT FOR LOCATION OF NEW SCHOOLS OF OPTOMETRY

As a result of the growing recognition of the benefits to be derived from academic health centers, as a result of the encouragement informally provided by the Association of Academic Health Centers, and as a result of the success of the School of Optometry within the academic health center at the University of Alabama in Birmingham, the Association of Schools and Colleges of Optometry adopted a resolution in September 1974, indicating the factors that should prevail in the creation of new schools. The statement, which was also adopted by the Council on Optometric Education of the American Optometric Association in April 1975, is of pertinence to this report and is quoted below.

1. Under appropriate conditions, the most advantageous location for a new school or college of optometry is in the academic health center of a state university.
2. Optometry should have separate status as a professional school or college, administratively on the same level as medicine and dentistry, within the health center.
3. There should be strong central administrative support for the school or college of optometry and commitment to interdisciplinary development and interaction.
4. There should be shared basic health science programs for students of the health professions where appropriate.
5. There should be the opportunity for development of optometric clinical services in the various patient care facilities of the center.
6. There should be the opportunity to develop interdisciplinary research programs of mutual interest.
7. There should be a commitment to graduate and continuing education for the further development of practicing optometrists and future educators.
8. The size of the entering class of professional students should be approximately 60 students.
9. The school should be located in a community of at least 200,000 population to provide an adequate clinical base for the program.
10. The school should, where possible, be a regional resource for the development of optometric manpower and vision care referral service.
11. There should be a commitment of both adequate capital funds and operating support to provide for the orderly development of a program of excellence in optometric education.

12. There should be an established student-faculty ratio of not less than one faculty member per five students.

OSTEOPATHY IN AN ACADEMIC HEALTH CENTER

For some time, the director of this project has been stating that if the health professions cannot or do not resolve constructively, their differences and jurisdictional disputes in the delivery of health care, decisions for such issues will be reached and enforced through public pressures. The establishment of a college of osteopathic medicine at Michigan State University (MSU) in East Lansing partially represents such a development.

The decision to establish the College of Osteopathic Medicine at a university which had just established a College of Human (allopathic) Medicine was made by the Michigan state legislature; the legislature further made its intentions known to the effect that these two colleges were to plan and work constructively together. The administration of MSU "got the word." The result is a very healthy working relationship between these two functioning colleges that will undoubtedly have a wide influence in improved cooperation in the delivery of health care on the part of doctors of medicine and doctors of osteopathic medicine in Michigan and ultimately in other states.

There are five primary areas of curricular cooperation among the health professional schools at MSU which offer education in allopathic medicine, osteopathic medicine, veterinary medicine, nursing, and several allied health professions. These areas of cooperation are based upon administrative policies that predated the recent creation of the two medical schools. (Veterinary medicine had existed on the campus for a number of years.) The five areas of cooperation are identified as follows:

1. Basic science departments offer courses for students in all schools and include such fields as anthropology, biochemistry, biophysics, microbiology, pathology, pharmacology, physiology, psychology, and sociology. In other words, the duplication of departments which serve only one school is not permitted by university policy.
2. Cross registration of students from one school in courses offered by other schools is permitted.
3. Some conjoint appointments of faculty by more than one college are made.
4. There are several departments, such as psychiatry, and the office of medical education, research and development, that are common to more than one college.
5. Joint community based clinical instruction is offered. Furthermore, a multi-million dollar university out-patient clinic is currently being constructed to serve all of the human health related professions.

The policy of single departments and the other practices that encourage cooperation among the different professional fields do have many benefits as demonstrated at Michigan State. It is commonly accepted on the campus that such single departments reduce administrative costs; whether they reduce other operating expenses, such as use of equipment and space, to any appreciable extent is a question that is being analyzed at the present time in a special study being conducted at MSU. Also being studied is a way to simplify a complicated budget system in which single departments are funded by as many as four colleges.

With respect to additional benefits, single departments can provide broader, deeper and more up-to-date coverage of the discipline than several smaller departments distributed among two or more separate colleges. Related to this factor is the support that single departments can give to research which, in turn, means that graduate programs can be more effective.

It is also claimed that single departments provide more flexibility in scheduling, arrangements of class sizes, and assignment of faculty. But this presumed efficiency in scheduling does not invariably materialize because in certain fields, such as anatomy and pathology, the three medical schools require different approaches to the subject matter. On the other hand, biochemistry, microbiology, and physiology do offer similar courses to the allopathic, osteopathic, and veterinary medical students.

The initial reaction of the legislator, of the government official, or of the planner to the issue of single, common departments in the basic sciences is a natural assumption that such an administrative structure provides efficiency. Upon further investigation, other factors appear and deserve serious attention.

Very large single departments could lose cohesiveness and develop fragmentation and polarization among their faculty members, thus adversely influencing students. Such single departments could find it difficult to balance a strong interest in the field of the discipline with the interests and concerns of the health professional school, or to balance the differences that naturally exist among the health professions being served. If common courses in the basic sciences are required of students in all of the health professional schools, the result could be a deleterious restriction on flexibility in curriculum development. For example, at MSU, allopathic medicine has placed emphasis on the focal problems approach in its curriculum, and osteopathic medicine has employed the systems approach. To have insisted that students in all three medical schools take exactly the same basic courses would have restricted each school in developing a curriculum that it thought best for the type of health care its students will be expected to provide.

The consensus at MSU seems to be that the advantages of the single basic sciences department outweigh the disadvantages and that there should be no change in this form of academic structure. To an outside observer, it would seem appropriate to recommend that any other university or academic health center considering the adoption of such a system take into account local traditions, facilities, financing, number and type of health professional fields to be involved, and other pertinent factors

before concluding that single departments in the basic sciences are universally appropriate for academic health centers. This observation should not be construed as questioning the validity of including such professional education programs as optometry, osteopathy, or podiatry in academic health centers.

PODIATRY IN AN ACADEMIC HEALTH CENTER

In 1961, the director of this project was the chairman of a Special Commission on the Status of Podiatry Education, which issued a report entitled *Podiatry Education in the 1960s*. The concluding recommendation strongly urged that the colleges of podiatry be included among the professional schools of universities.

Over a decade later, the State University of New York at Stony Brook established a school of podiatric medicine within its academic health center. Included as part of the announcement from this school is the following statement:

It is unique in that it is the first podiatric medical school in the nation situated in an academic health sciences center. This will allow for considerable multidisciplinary interaction by students and faculty of all the schools in the Health Sciences Center. For example, since students of podiatric medicine require a basic science background similar to students of medicine and dental medicine, instruction in this area will be provided by the School of Basic Health Sciences in a curriculum equivalent to that required for medical students. Basic science instruction, however, will be supplemented with classroom and laboratory studies in those areas highly specialized to podiatric medicine such as functional anatomy of the lower extremities.

Not only is it planned that the core curriculum for the podiatry students will be virtually the same as the core curriculum for the candidates for the degree of Doctor of Medicine, but the students of podiatric medicine will be receiving their education in the same educational environment with students from the schools of allied health professions, dental medicine, nursing, and social welfare. They will share university resources in the library, instructional media, computer center, and the student center. Leonard A. Levy, D.P.M., Dean of the School of Podiatric Medicine, has enthusiastically commented, "the new Health Sciences Center building will house, under one roof, all of the schools within the Center."

As a result of foresight and persistence by members of the podiatry profession, as a result of understanding and cooperation by members of other professions, especially some members of the medical profession, and as a result of financial support on the part of government, podiatry has now attained a platform in an academic setting in which it can participate cooperatively in research ventures with the other health sciences, where it can participate as a major health profession in the delivery of clinical

services to patients, and where it can function constructively in planning and devising models for the delivery of good health care; and good health care is the ultimate goal of education in any of the health professions.

INTER-INSTITUTIONAL COOPERATION OF HEALTH PROFESSIONS EDUCATION

In case it might be assumed that cooperation in the education of optometry, osteopathy and podiatry students with other health professions is undertaken only through the Philadelphia Interdisciplinary Health and Education Program, or at the University of Alabama in Birmingham, Michigan State University, or the State University of New York at Stony Brook, it is appropriate to report some of the ways in which cooperation is being conducted by other institutions that are providing education for these three professions. Intra-institutional and inter-institutional cooperation takes place at other colleges and in different ways.

Some independent colleges of optometry and of podiatry and other adjacent educational institutions have developed plans for reciprocal use of libraries, clinics, laboratories, health and medical facilities, recreational and student facilities, parking areas and campus busses, as well as sharing computer time. Several institutions have been making a few joint faculty appointments, arranging common weekly calendars and academic schedules, mutually planning visiting lecture series, offering common basic science courses, encouraging cross enrollment of students for designated courses, supporting common research projects and graduate programs. Even faculty club facilities have been included in the joint planning, and joint student activities have been encouraged. Obviously, there are many different ways by which institutions may cooperate. Although none were reported to have undertaken joint student recruitment and fund raising these are areas that could be developed.

In fact, an educational institution, especially one that is educating future members of the health professions, that is not at least intimately cooperating with other educational institutions educating health professional students, may be seriously criticized for not doing so, and criticized on at least two counts. First, as has already been emphasized in this report, the members of the health professions must learn to work and cooperate with each other for the improvement of the delivery of health care. No better time exists for this to begin than when they are students. Second, society no longer can afford the physical space, especially in our metropolitan areas, nor the costs of construction and maintenance of duplicate facilities that are not used to near capacity.

Cooperation among independent schools in the health professions is one means of attempting to meet these two needs, but the more constructive and potentially successful method is to establish the schools for the various health professions at the time of their creation within a university academic health center.

IMPLICATIONS OF EDUCATIONAL COOPERATION FOR OPTOMETRY, OSTEOPATHY AND PODIATRY IN NEW ENGLAND

In view of the constructive move throughout the country toward the incorporation of education for the health professions within academic health centers, and in view of the more recent and successful integration of schools of optometry, osteopathy and podiatry in universities, one may unhesitatingly make the following observations with respect to future education in New England for students in these three professional fields.

1. Colleges of optometry, osteopathy and podiatry, or any combination of them, could be developed on a cooperative basis so that each would gain from such an association. The extent and type of cooperative and coordinate development would depend on the location of the colleges, the traditions of the university academic health center with which they may be associated, the support for such education from the administrative officers of the institution, the extent of financial assistance, the facilities provided, and, not the least, the reception extended by the faculties of the other professional colleges in the institution.
2. Whether education in the basic science courses of a discipline is provided by single departments or multiple departments to the several professional colleges would depend also on many of the factors identified in the previous paragraph. It would be desirable if single departments could be maintained for this purpose, but to insist upon single departments at the expense of other important issues identified earlier in this chapter of the report, might tend to place undue restrictions on the development of appropriate education for the different professions. The primary issue is cooperation in the ultimate delivery of health care, not the specific administrative structure through which education is provided to the students.
3. Since plans are currently, but separately from this project, being developed for the establishment of a college of veterinary medicine in New England, it should be noted that this professional field of study could be located in an academic health center and be incorporated on a cooperative basis with optometry, osteopathy and podiatry, plus other health educational programs. However, it should be emphasized that a combination of optometry and veterinary medicine, or podiatry and veterinary medicine alone without other health education programs would not provide sufficiently similar academic and clinical studies to warrant such partnerships.

4. As has been noted, there are at present, no colleges of osteopathic medicine or podiatric medicine in New England, and the manpower analyses indicate a definite need for professional schools in these fields if there is to be adequate provision to meet the health needs of the citizens of New England. To provide proper education for the future members of these professions, such colleges, if established, should be created as parts of academic health centers.
5. Although an independent college of optometry with a long history does exist in New England, optometric education, for which there is a continuing need in New England as demonstrated in the previous chapter of this report, should be offered only within the setting of an academic health center which is receiving adequate financial support. The implementation of such a policy will involve the conversion of the present college of optometry into an institution with a different structure and different financial support, as indicated in the concluding chapter of the report. Implementation will also require recognition by the ophthalmological societies in New England that optometry is a legitimate, scientific, and independent health profession. Implementation will also require agreement by the ophthalmologists to the conclusion of the editorial published in the March 1971, issue of the *Massachusetts Physician* which stated:

The optometrist is a highly trained specialist in correcting visual defects by prescription and fitting of glasses. If these services can be combined with, rather than compete with, those of the ophthalmologist, both professions and particularly the patient would benefit. If the two professional groups are to be brought together, this cooperation must begin during the educational and training period. Incorporation of schools of optometry not only into universities but into their medical centers should be a first step. If both education and training were integrated on the medical center campus, the distrust of each other's capabilities would break down and possibly a working relationship between the two professions would develop that would best serve the patient's interests.

CHAPTER VI

MASSACHUSETTS COLLEGE OF OPTOMETRY

Since education for the three health professions which are the focus of this study is offered in New England only in the field of optometry, it is appropriate that this study should be concerned primarily with the Massachusetts College of Optometry (MCO) and the feasibility of converting it to a regional, multi-state supported professional college. For over eight decades, this independent institution has furnished training to students who wished to provide eye care to the citizens of the six New England states or to patients in other regions of the country. It has done so with little or no cost to the public treasuries of these New England states even though the majority of the practicing optometrists in this region have been educated at MCO.

In recent years, conditions have been rapidly changing, and it would appear that education in New England for future optometrists can be maintained only if the college is supported by a different financial base. A detailed and thorough analysis of the financial status of the Massachusetts College of Optometry has been conducted as a major part of this project and a summary of the analysis is presented in this chapter. An analysis of factors relating to enrollment and graduation substantiates the importance of this institution, whose graduates have practiced the profession of optometry in all sections of New England, and prompts the question - where would New England obtain its optometrists if the Massachusetts College of Optometry did not exist?

OPTOMETRIC MANPOWER AND THE MASSACHUSETTS COLLEGE OF OPTOMETRY

RECENT ENROLLMENT HISTORY

Figure VI-1 illustrates the fact that the number of completed applications to MCO has increased sharply from 172 in 1967 to 506 in 1974, with a high of 553 in 1973. The first-year enrollment has grown at a slightly more gradual rate, from 32 in 1964-65 to 89 in 1974-75. Total enrollment at MCO, including students in special programs leading to the O.D. degree, has also increased and in the 1974-75 academic year was approximately double the enrollment of 1964-65.

The decline in the number of completed applications for the 1974-75 academic year is the direct result of the implementation by MCO of a policy of discouraging the submission or completion of an application by a student who (1) has not finished four years of undergraduate education, (2) has an undergraduate grade-point average of less than 3.0, or (3) is not a resident of a New England state.

Table VI-1 contains the enrollment of minority group students at MCO for 1972-73 through 1974-75. In these three years, the number of minority group students increased from 22 to 35, and the percentage of the total enrollment increased from 8.6 percent to 12.3 percent. Female minority group enrollment increased from 1.6 percent of the total enrollment to 2.5 percent.

Analysis of male and female enrollment at MCO for the past three years, shown in Table VI-2, indicates that the number of women students almost doubled during that period, increasing from 22 in 1972 to 43 in 1974. The proportion of women students increased from 8.6 percent to 15.1 percent, and for each year the greatest proportion of women students was in the first-year class.

RESIDENCE OF APPLICANTS AND STUDENTS

As shown in Table VI-3, the proportion of applications from the New England residents compared to the total number of applications has dropped from 39 percent in 1972 to 28 percent in 1974. This percentage drop is the result of two factors: the number of New England applications was lower in 1974 than in 1973 or 1972, while the number of non-New England applications showed a net increase. In fact, the number of applications from New York residents in 1973 and in 1974 exceeded the total number of applications in the same years from all six New England states, despite MCO's new policy of discouraging non-New England applicants.

It does appear, however, that the policy of granting admissions preference to New Englanders has been implemented, because the 1974-75 academic year represents a sharp change from the two previous years for which state-by-state application information is available. This change is manifested in the admission and enrollment of a first-year class larger than in any year in the past decade, despite a decrease in the number and percentage of applicants from New England. Fifty-five percent of the class entering in September 1974, was from New England, even though only 28 percent of the applications for that class was from New England.

The fluctuations in the numbers of students from each New England state enrolled in the first-year class since 1964, as depicted in Figure VI-2, seem to preclude any conclusive statements. However, in each state the average number per year from 1970 to 1974 is higher than the average number per year from 1964 through 1969.

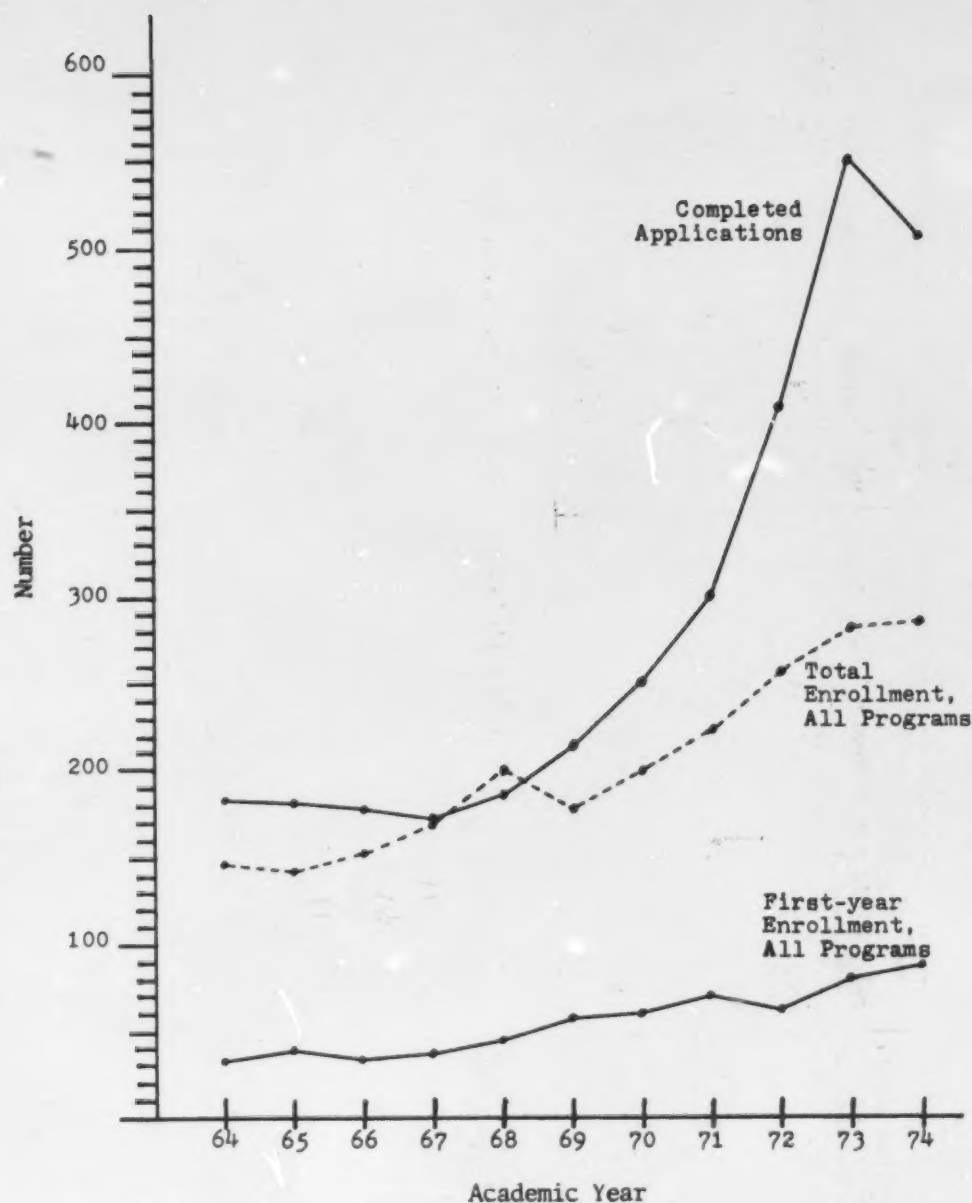
Figure VI-3 demonstrates the fluctuations of the proportions of first-year students who were residents of New England, New York and other states or countries. The greatest source of students outside New England has been New York; in September 1969, more first-year students came from New York than from New England. Applications from New York have increased despite the creation of a college of optometry in 1970 as part of the State University of New York. New Jersey and Pennsylvania follow New York as sources of applications and of students. While it is difficult to discern any trend from the data in Figure VI-3, the abrupt shift in proportions in 1974 is attributable to the adoption by MCO of the policy establishing priority for applicants from New England.

Table VI-4a displays, by class, the 1974-75 enrollment at MCO of residents of the New England states, of New York and the remaining states, and of Canada and foreign countries. Table VI-4b contains the same information expressed as percentages of each class total. Slightly fewer than one-half of the students were from New England, about one-quarter were from New York and one-quarter were from the other states, while fewer than two percent were

from Canada or other foreign countries. The proportion of New England residents in the first-year class was greater than that of any of the other three classes.

Most of the 1974-75 MCO students who were from New England had received their undergraduate education at colleges or universities in New England, and most of the students who were not from New England obtained their undergraduate education at institutions outside this region. If more non-New England residents had attended a New England school prior to enrollment at MCO, it might have been possible to explore a correlation between the location of undergraduate education and the decision to attend MCO. No such correlation appears to exist. As mentioned in Chapter IV, MCO is one of the few optometric colleges to which students from many states may apply with any chance of admission, and is very nearly the only optometric college to which a New England resident may apply with any chance of consideration. Moreover, half of the non-New England students at MCO were from New York, and their proximity to this region undoubtedly influenced their awareness of and participation in the educational opportunities that exist in New England.

FIGURE VI-1
 MASSACHUSETTS COLLEGE OF OPTOMETRY
 APPLICATIONS AND ENROLLMENT, 1964 - 1974



Source: The Massachusetts College of Optometry, data provided October 1974. Annual Surveys of Optometric Educational Institutions, The American Optometric Association, data provided March-June 1975.

TABLE VI-1
MASSACHUSETTS COLLEGE OF OPTOMETRY
ENROLLMENT OF MINORITY GROUP STUDENTS, 1972-73 - 1974-75

Academic Year	Total Enrollment, All Students	Black American		Spanish Surnamed		American Indian		Asian American		Foreign Nationals		Minority Group Totals		Grand Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1972-73 % of Total Enrollment	256	5 1.9	1 0.4	1 0.4	2 0.8	0 -	0 -	4 1.6	0 -	8 3.1	1 0.4	18 7.0	4 1.6	22 8.6
1973-74 % of Total Enrollment	281	8 2.8	3 1.1	2 0.7	1 0.3	0 -	0 -	2 0.7	1 0.3	10 3.5	2 0.7	22 7.8	7 2.5	29 10.3
1974-75 % of Total Enrollment	285	9 3.1	3 1.1	2 0.7	3 1.1	0 -	0 -	8 2.8	0 -	9 3.1	1 0.3	28 9.8	7 2.5	35 12.3

Source: Annual Surveys of Optometric Educational Institutions, The American Optometric Association, data provided March-June 1975.

TABLE VI-2
MASSACHUSETTS COLLEGE OF OPTOMETRY
MALE AND FEMALE ENROLLMENT, 1972-73 - 1974-75

Academic Year	1st Year		2nd Year		3rd Year		4th Year		Total		Grand Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1972-73	52	10	58	5	67	7	57	0	234	22	256
% of Class	83.9	16.1	92.1	7.9	90.5	9.5	100.0	-	91.4	8.6	100.0
1973-74	66	16	52	10	59	5	66	7	243	38	281
% of Class	80.5	19.5	83.9	16.1	92.2	7.8	90.4	9.6	86.5	13.5	100.0
1974-75	72	17	51	12	52	10	67	4	242	43	285
% of Class	80.9	19.1	81.0	19.0	83.9	16.1	94.4	5.6	84.9	15.1	100.0

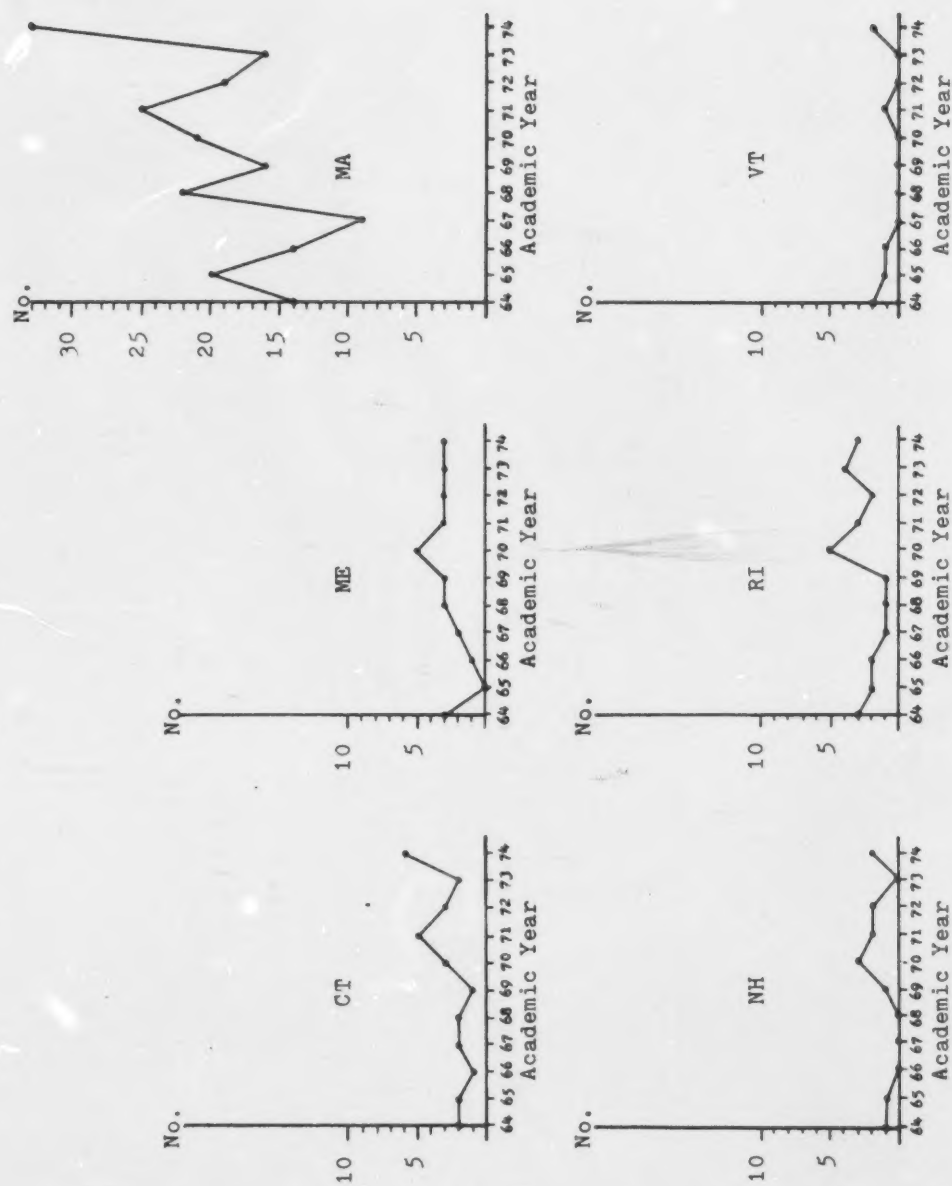
Source: Annual Surveys of Optometric Educational Institutions, The American Optometric Association, data provided March-June 1975.

TABLE VI-3
MASSACHUSETTS COLLEGE OF OPTOMETRY
APPLICATIONS AND FIRST-YEAR ENROLLMENT, 1972-73 - 1974-75

Residence	Academic Year					
	1972-73		1973-74		1974-75	
	Applied	Enrolled	Applied	Enrolled	Applied	Enrolled
Connecticut	27	3	32	2	24	6
Maine	14	3	20	3	11	3
Massachusetts	80	19	89	16	85	29
New Hampshire	14	2	11	0	7	2
Rhode Island	16	2	10	4	10	3
Vermont	8	0	9	0	4	2
New England <i>Percent of Total</i>	159 39.0	29 46.0	171 30.9	25 30.5	141 27.9	49 55.1
New York <i>Percent of Total</i>	119 29.2	13 20.6	183 33.1	24 29.3	189 37.3	21 23.6
Other U.S. <i>Percent of Total</i>	130 31.3	21 33.3	199 36.0	33 40.2	176 34.8	19 21.3
Total <i>Percent</i>	408 100.0	63 100.0	553 100.0	82 100.0	506 100.0	89 100.0

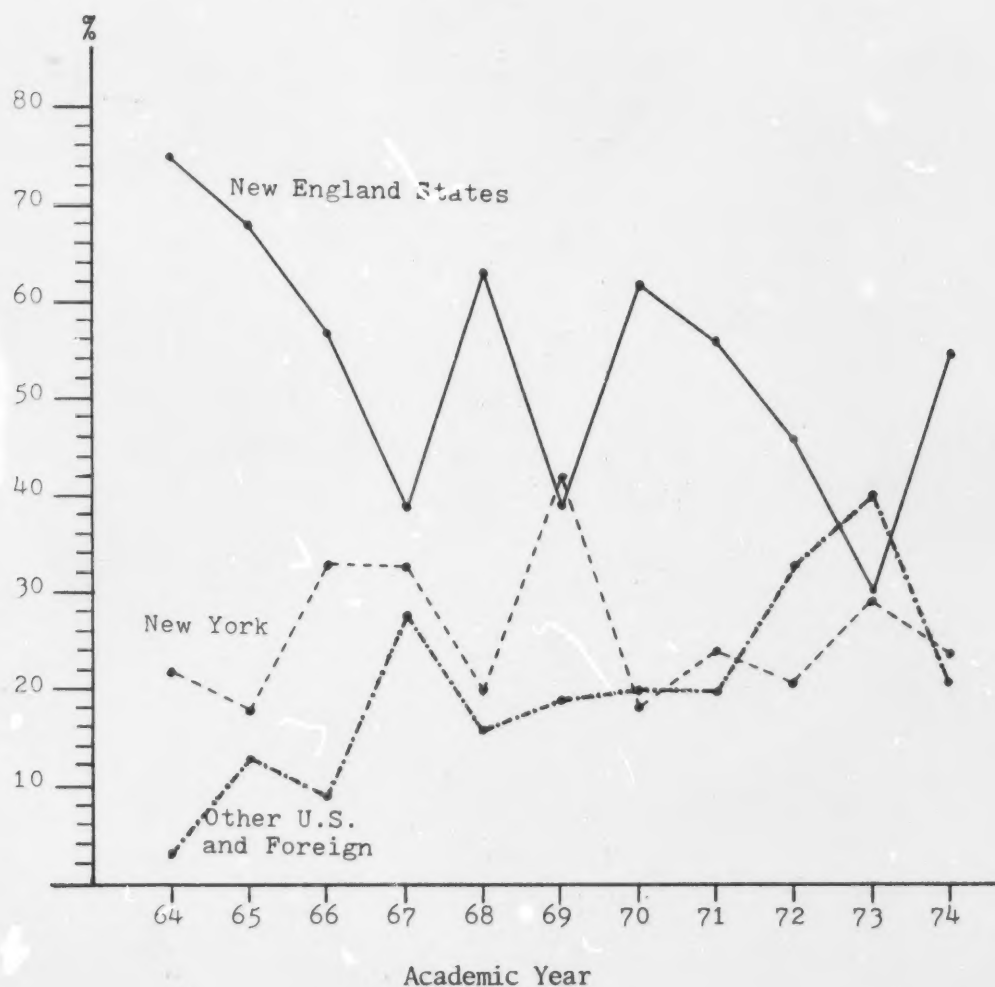
Source: Office of the Registrar, the Massachusetts College of Optometry, data provided October 1974.
Annual Surveys of Optometric Educational Institutions, The American Optometric Association,
data provided March-June 1975.

FIGURE VI-2
MASSACHUSETTS COLLEGE OF OPTOMETRY
ENROLLMENT OF FIRST-YEAR STUDENTS FROM NEW ENGLAND, 1964 - 1974



Source: Annual Surveys of Optometric Educational Institutions, The American Optometric Association, data provided March-June 1975.

FIGURE VI-3
MASSACHUSETTS COLLEGE OF OPTOMETRY
RESIDENCE OF FIRST-YEAR STUDENTS, 1964 - 1974



Source: The Massachusetts College of Optometry, data provided October 1974.
Annual Surveys of Optometric Educational Institutions, The American
Optometric Association, data provided March-June 1975.

TABLE VI-4a
MASSACHUSETTS COLLEGE OF OPTOMETRY
ENROLLMENT BY CLASS AND RESIDENCE, 1974-75

	CT	ME	MA	NH	RI	VT	Total N.E.	NY	Other U.S.*	Total U.S.	Canada and Foreign	Grand Total
1st Year	6	3	33	2	3	2	49	21	17	87	2	89
2nd Year	2	4	14	0	3	0	23	19	21	63	0	63
3rd Year	3	2	17	2	2	0	26	15	20	61	1	62
4th Year	5	3	25	0	2	1	36	19	14	69	2	71
Total	16	12	89	4	10	3	134	74	72	280	5	285

TABLE VI-4b
MASSACHUSETTS COLLEGE OF OPTOMETRY
PERCENTAGE OF ENROLLMENT BY CLASS AND RESIDENCE, 1974-75

	CT	ME	MA	NH	RI	VT	Total N.E.	NY	Other U.S.*	Total U.S.	Canada and Foreign	Grand Total
Percentage												
1st Year	6.7	3.4	37.1	2.2	3.4	2.2	55.1	23.6	19.1	97.8	2.2	100.0
2nd Year	3.2	6.3	22.2	-	4.8	-	36.5	30.2	33.3	100.0	-	100.0
3rd Year	4.8	3.2	27.4	3.2	3.2	-	41.9	24.2	32.3	98.4	1.6	100.0
4th Year	7.0	4.2	35.2	-	2.8	1.4	50.7	26.8	19.7	97.2	2.8	100.0
Total	5.6	4.2	31.2	1.4	3.5	1.1	47.0	26.0	25.3	98.3	1.7	100.0

* Includes District of Columbia and Puerto Rico.

Source: The Massachusetts College of Optometry, data provided October 1974.

LOCATION OF GRADUATES

There is no complete or comprehensive information available with which to study the migratory pattern of a student from home state to undergraduate school, to professional school, to location of practice. However, S.R. Andreas reported in the *Journal of the American Optometric Association* that for graduates of the Southern College of Optometry in Memphis, Tennessee, the best predictor of the state in which an optometrist would establish practice was the state in which he or she graduated from high school. Since regional demographic characteristics could be sufficiently significant to prevent the application of these findings to New England, a similar study in New England would be useful. The limited information that is available at this time seems to indicate that most of the graduates of MCO are practicing in New England, that most of the 1968 graduates of MCO are practicing in their home states, and that most of the graduates of other optometry colleges are practicing in the state or region in which they studied optometry.

Table VI-5 shows the distribution, in 1973, of 1,122 active optometrists throughout the United States who indicated on the Optometric Manpower Research Project (OMRP) survey that they had been graduated from the Massachusetts College of Optometry. Almost three-quarters of MCO's graduates were active practitioners in New England, ranging from 49 percent practicing in Massachusetts to 1.2 percent practicing in Vermont. Only four non-New England states (California, Florida, New Jersey, and New York) were the practice location of more MCO graduates than Vermont. In fact, 15.1 percent of all MCC graduates were practicing in New York, New Jersey and Pennsylvania; thus, 89.4 percent of the active practitioners who had received their O.D. degrees from MCO were practicing their profession in the New England, New York, New Jersey, Pennsylvania region of the United States.

In 1968, the only year of graduation for which such detailed information is available, 32 optometrists were graduated from MCO, 21 of whom were residents of the New England states. As Table VI-6 shows, 13 of those 21 New England residents were practicing in their home state at the end of 1974, four were practicing in a different New England state, two were practicing in a non-New England state and two were either continuing their education or were in the military. Two graduates who were not from New England established practices in New England, bringing to 19 the total number of 1968 graduates who were practicing in the region. Eight of the 11 non-New England residents returned to their home states to practice, two established practices in New England, and one moved to a western state. Although these figures are for one graduating class only and should not be generalized, they are not inconsistent with the data collected by the Optometric Manpower Resources Project in 1973.

Responses to the Optometric Manpower Resources Project survey indicated that for any of the colleges of optometry, the largest proportion of graduates was actively practicing in the state in which the college was situated. Table VI-7 lists the ten colleges whose graduates could be included in the survey (the colleges in Alabama and New York were founded too recently to have had licensed graduates to whom the survey could have been sent), and shows for each college the percentage of active graduates practicing in the college's state. Two findings are most pertinent: (1) no college had a larger proportion of graduates practicing in a different state; and (2) the overall

proportion of graduates of the four publicly supported colleges who were practicing in the colleges' respective home states was 65.9 percent, compared to the corresponding overall proportion of 35.4 percent for the six private colleges.

The percentage for MCO was the second highest among the private colleges; a total of 74.3 percent of MCO's active graduates were practicing in the New England region. As would be expected, if the practice locations of other colleges' graduates include nearby states, the proportions increase. For example, over 70 percent of the active graduates of the Pennsylvania College of Optometry are practicing in Maryland, New Jersey, New York, and Pennsylvania. These distributions of practitioners appear to reflect the admissions orientations of the colleges, and may soon show a greater degree of regional clustering in accordance with the adoption of more stringent admissions policies based upon financial support and regionalism.

SUMMARY

The data presented in this section of this chapter, as well as some of the data discussed in Chapter IV, indicate the importance of the role of the Massachusetts College of Optometry with respect to the New England region:

1. Almost two-thirds of the optometrists in active practice in New England in 1973 had received their optometric education at MCO.
2. Despite yearly fluctuations in the proportion of New England residents versus non-New England residents accepted for enrollment at MCO, nearly three-quarters of the active optometrists who had been graduated from MCO through 1973 were practicing in the New England states.
3. States or regions in which a college of optometry is situated have greater numbers of actively practicing optometrists than do states or regions in which there is no optometric college. As the admissions policies of the colleges of optometry become increasingly regional in their orientation, this distributional pattern of practitioners is likely to become more pronounced.
4. Both nationally and in New England, it is expected that the pool of optometric practitioners will be subject to an increased rate of attrition in the near future. States which do not provide financial support to optometric educational institutions, whether in the form of contracts or of direct state or regional funding, will be much more likely to experience a greater loss in optometric manpower. The result will be a decrease in the availability of vision care services to the residents of these states.

TABLE VI-5
MASSACHUSETTS COLLEGE OF OPTOMETRY
PRACTICE LOCATION OF ACTIVE GRADUATES, 1973

	CT	ME	MA	NH	RI	VT	Total N.E.	NY	NJ	PA	Other U.S.	Total Non-N.E.	Grand Total
Number of Graduates	68	81	550	44	77	13	833	108	53	9	119	289	1,122
Percent of Total	6.1	7.2	49.0	3.9	6.9	1.2	74.3	9.6	4.7	0.8	10.6	25.8	100.0

Source: Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration,
USHEW, preliminary data published 1974.

TABLE VI-6
MASSACHUSETTS COLLEGE OF OPTOMETRY
1968 GRADUATES BY ORIGINAL RESIDENCE AND LOCATION OF PRACTICE IN 1974

Original Residence	Number of Graduates	Continuing Education or Military	Losses		Returned to Practice in Home State	Gains		Total Number Practicing in State
			To N.E. State	To non-N.E. State		From N.E. State	From non-N.E. State	
CT	3	0	1	1	1	1	2	4
ME	3	0	0	1	2	1	0	3
MA	12	1	3	0	8	1	0	9
NH	0	0	0	0	0	0	0	0
RI	1	0	0	0	1	1	0	2
VT	2	1	0	0	1	0	0	1
N.E. Subtotal	21	2	4	2	13	4	2	19
NY	8	0	1	1	6	1	0	7
NJ	2	0	1	0	1	0	0	1
MI	1	0	0	0	1	0	0	1
CO	0	0	0	0	0	0	0	0
VA	0	0	0	0	0	0	1	1
Total	32	2			21		+9	30

Source: The Massachusetts College of Optometry, unpublished data compiled and provided December 1974.

TABLE VI-7
ACTIVE GRADUATES OF THE COLLEGES OF OPTOMETRY BY LOCATION OF PRACTICE, 1973

Colleges*	Location	Total	Active Graduates	
			Practicing in State in which College is Located Number	Percentage
MCO	Massachusetts	1,122	550	49.0
PCO	Pennsylvania	2,268	933	41.1
ICO	Illinois	1,907	454	23.8
PU	Oregon	931	252	27.1
SCCO	California	1,447	1,152	79.6
SCO	Tennessee	2,502	262	10.5
IU	Indiana	360	194	53.9
TOSU	Ohio	865	521	60.2
UC	California	828	716	86.5
UH	Texas	402	186	46.3
Totals		12,632	5,220	41.3

*The colleges of optometry at the University of Alabama and in the State University of New York system were founded too recently to have graduates included in the survey.

KEY:

MCO - Massachusetts College of Optometry
 PCO - Pennsylvania College of Optometry
 ICO - Illinois College of Optometry
 PU - Pacific University College of Optometry
 SCCO - Southern California College of Optometry
 SCO - Southern College of Optometry
 IU - Indiana University Division of Optometry
 TOSU - The Ohio State University College of Optometry
 UC - University of California, Berkeley, College of Optometry
 UH - University of Houston College of Optometry

Source: Optometric Manpower Resources Project, Bureau of Health Manpower, Health Resources Administration, USDHEW, preliminary data published 1974.

FINANCING OF THE MASSACHUSETTS COLLEGE OF OPTOMETRY

From the preceding enrollment data for MCO, one may readily recognize the contributions that this independent institution has made to the profession of optometry and to the eye care of the citizens of New England by educating a large percentage of the optometrists who are practicing in the six states of New England. From the following information, one may equally readily appreciate the very precarious financial conditions of the college that exist at present. This situation is largely the result of strides that have been made in the past half dozen years to strengthen further the education offered by the college, by relocation at a new site to facilitate this educational improvement, and by expansion of the enrollment of students beyond optimum capacity in order to meet federal government requirements for capitation grants and increase the number of graduates entering the practice of optometry. These factors, plus rapid inflation, have stretched the college to its absolute limit, if not beyond its financial capability.

The present and growing financial stress at the Massachusetts College of Optometry should be of concern to individuals who are interested in the delivery of eye care to the citizens of the New England states. This condition should also be recognized as generally a typical situation that prevails at this time with most independent colleges providing education for any one of the health professions.

The series of financial tables that concludes this chapter has been prepared by financial consultants to the project with full cooperation and assistance of the president and business officers of MCO. These tables show (1) actual revenues and expenditures for the fiscal years 1966 through 1975; (2) projected budgets for the fiscal years 1976 through 1979, assuming operation of the college in the same location at approximately the same level of educational offerings, but, according to the present administration, with an inadequate budget; and (3) projected budgets for the fiscal years 1976 through 1979, assuming operations of the college in the same location but otherwise under adequate conditions including an adequate budget. (The adequate conditions include more funds for faculty salaries, teaching equipment for laboratories and clinics, supporting staff assistants, library and learning resources, and auxiliary laboratory equipment.)

Although these several tables are largely self-explanatory, some comments and observations are essential. The observations that follow relate to the actual revenues and expenditures for the years through fiscal year 1975, and to the anticipated financial conditions of the college for the fiscal year commencing July 1, 1975.

OPERATING REVENUES

As the financial reports (Table VI - 8 and supplement A) indicate, MCO underwent a marked transformation from the years 1970 through 1975. During this period, the yearly revenue increased from \$699,310 to \$1,499,095, while the enrollment of the college expanded from 178 to 283.

Between 1970 and 1975, the income from students was nearly tripled, from \$262,969 to \$742,919, and the average tuition income per student grew from \$1,477 in the year 1970 to \$2,625 in the year 1975.

Financial support from government, almost exclusively from the Health Professions Educational Assistance programs, began with the fiscal year 1967 in the amount of \$39,654. It was expanded successively during the next several years with the largest funding in the year 1972, amounting to \$700,577, including a financial distress grant. During the three fiscal year period of 1972 through 1974, financial distress grants from the federal government have totaled \$611,649.

Federal funding, on which MCO became distressingly dependent, has receded since 1972, and in the fiscal year 1975 a request for a financial distress grant was denied. As a result of this major factor and as a result of the enrollment in the college, the largest during 1974-75 of any year in its 80 year history, the average income per student is less in fiscal years 1974 and 1975 than in fiscal 1973 by almost \$500 per student.

It should be emphasized that the increase in enrollment during the past several years has been necessitated primarily by requirements of the federal government for eligibility of capitation grants. This requirement has meant, according to the administration, that the institution has recently been operating with an enrollment exceeding its capacity and consequently is forced to operate at less efficiency than would be the situation with a slightly smaller student body. By increasing its enrollment in recent years MCO has been eligible for capitation grants from the federal government. In fiscal year 1975 these funds from this source alone amounted to \$230,085.

OPERATING EXPENDITURES

Corresponding with the increase in revenues during the fiscal years since 1966, there has been an increase in expenditures at MCO (Table VI-8 and supplement B). Between 1966 and 1969, the expenditures more than doubled, whereas from 1969 to 1975 they increased more than fivefold. In 1966, the average operating expenditures per student were \$1,064 and in 1975 they were \$5,869. In 1975 the total expenditures were over \$1,660,000 for the institution.

The major impetus for increased expenditures came in the early part of the present decade following a visit to MCO by an accrediting team of the Council on Optometric Education of the American Optometric Association and a subsequent review by the council. The council's recommendations to the college emphasized that the educational program needed to be strengthened, that more full-time and better qualified administrative and faculty members should be appointed, that improved physical facilities were a requisite, and that other improvements, most all requiring expenditures of funds, should be introduced.

As a result of these developments, the academic program of the college has been improved. However, at the same time, as will be noted later, the financial conditions are now subject to severe strain and require immediate attention and drastic action.

CLINICAL INCOME AND EXPENDITURES

Special attention should be called to the rapid yearly increase in what has been classified as clinical income commencing with the fiscal year 1971. Prior to 1972, clinical expenditures had not been separately classified. However, between 1972 and 1975, clinical expenditures were more than doubled from \$207,042 to \$480,891 (Table VI-8, and supplements A and B).

Income from clinics has been markedly less than expenditures. For example, in fiscal year 1975 with expenditures of \$480,891, the income received from the operations of the clinics totaled \$261,297. As an explanation, it may be noted that the clinics are operated primarily for the purposes of providing clinical experience and education to the students as an integral part of their education. They do provide important social contributions in the form of eye care services to the public, but this is secondary to the important educational functions. Consequently the clinics are not administered with the goal of showing a surplus in their operations.

The marked increase in clinical revenue and expenditures commencing in the early years of this decade also relates to increased emphasis on strengthening the educational program of the college following the accrediting visit of 1970. The number of clinics was increased so that today the college is operating 14 in 12 different locations.

PHYSICAL PLANT

Because of somewhat complicated financial arrangements, it is necessary to provide some detailed explanation of the manner in which the present teaching facilities located on Beacon Street in Boston were acquired and financed. These facilities were acquired to enable the college to increase its enrollment so that it might gain maximum benefit from federal support through capitation grants. Also, the relocation of the college was recommended in the 1970 report of the evaluation team representing the Council on Optometric Education of the American Optometric Association. This report stated that "space shortages provide one of the greatest limitations of the college" and recommended that another location be considered.

Prior to August 1971, when the college acquired the Beacon Street property, its teaching facilities were located at 178 Newbury Street, and the administrative officers were housed at 483 Beacon Street.

The property acquired in 1971 consisted of 420, 422, 424, 426 and 428 Beacon Street, Boston. Each number represents a separate building, title to which is owned under the name of the college or one of its two trusts: Massachusetts College of Optometry Building Trust or Optometric Realty Trust. The total purchase price of this property was \$1,200,000, less a down payment-bank loan of \$300,000, covered by mortgages.

An analysis of the mortgages is presented as follows:

	<u>Original Note</u>	<u>Balance 6-30-75</u>
Down payment loan secured by property at 178-180 Newbury Street and 472 Commonwealth Avenue, Boston	\$ 300,000	\$286,423
Beacon Street property listed above covered by first and second mortgages	893,187	678,624
Closing Costs	<u>6,813</u>	<u>-0-</u>
Totals	\$1,200,000	\$965,047

The above mortgages have been reduced by an amount of \$234,953 during the three year period 1972-75. Mortgage interest expended from the date of acquisition of the property through the fiscal year ending June 30, 1975, was \$282,794. During the fiscal years 1972 through 1975, pledges made, largely by alumni and other optometrists, to the MCO building fund totaled over \$300,000.

Continued efforts have been made by the college to sell the Newbury Street property, and thus reduce its mortgage indebtednesses and carrying charges.

FINANCIAL COMPARISON WITH OTHER COLLEGES

For the past several years, the Association of Schools and Colleges of Optometry has compiled comparative financial information from all the colleges of optometry, both independent and university related. Table VI-9 presents a summation of this comparative financial information for the fiscal year 1974.

These financial comparisons are of some interest but caution must be taken in their use. The colleges of optometry vary in size, in extent of clinical services, in amount of research undertaken, in physical space, and in accounting practices. Some are independent institutions; others are parts of universities with varying relationships and extent of academic coordination. No two are the same.

Despite these admonitions, it is informative to note the extremes among the colleges in the amount of revenue per student, in the percentage of income from federal support, and in the expenditures per student. The independent colleges of optometry are all finding their financial plight at the present time to be very serious, and the financial problems and issues that they face are not singular to one region of the country.

The seriousness of the present financial condition of MCO is presented in the following summary.

SUMMARY OF MCO'S FINANCIAL CONDITION

In summarizing the financial conditions at the Massachusetts College of Optometry, it must be noted that major annual operating and capital deficits have been incurred beginning with the fiscal year of 1970. As previously noted, these deficits are the result largely of relocating the college at a new site, expansion of its enrollment of students, and strengthening of the academic and educational program.

The MCO Balance Sheet as of June 30, 1969, (Table VI-10) indicates net current assets of \$164,242, fixed assets after depreciation of \$329,500, and a cash advance of \$150,034 to the Optometry Realty Trust. There were no long-term debts as of that date.

The cash advance to the Optometry Realty Trust was made for the purpose of purchasing property at 178-180 Newbury Street in December 1964, at a cost of \$463,500.

For the fiscal years 1970 through 1975 annual operating deficits total \$413,449. It should also be noted that the deficits would have been greater by \$611,649 if the college had not received federal distress grants totaling that amount for the fiscal years 1972, 1973, and 1974. These facts are presented in detail in Table VI-8.

Although the college acquired new teaching facilities in 1971 with no outlay of cash, it assumed a major long-term debt of \$1,200,000 as described under the section of this chapter entitled Physical Plant.

Furthermore, during the period 1972 through 1975, payments of \$517,747 were made toward interest and reduction of mortgages, as well as capital improvements to facilities of \$108,713, for a total expenditure during these four years of \$626,460.

During the same period, contributions to the MCO Building Fund of nearly \$320,000 and additional gifts of approximately \$50,000 amounted to some \$360,000. This total has been insufficient to cover the cost of the newly acquired Beacon Street facilities and capital improvements to them. The net result was a capital deficit of over \$265,000.

In the ten year period from fiscal year 1966 through 1975, contributions to the Building Fund of nearly \$400,000 and additional gifts of some \$50,000 amounted to a total of approximately \$450,000.

In addition to the above identified income, it should be noted that minor income of approximately \$12,000 per year is being received from the land owned on Newbury Street and leased for parking purposes. This yearly income is being applied toward the capital deficit.

In June 1975 the college entered into an agreement to sell the Newbury Street property at a gross price of \$450,000. If this agreement is consummated, the proceeds from the sale must be committed to a reduction of MCO's real estate indebtednesses.

The effects of the operating and capital deficits for the fiscal years 1971, 1972, 1973, 1974, and 1975 are reflected on the Massachusetts College of Optometry Combined Balance Sheet as of June 30, 1975 (Table VI-11 and Appendix B). The Combined Balance Sheet includes the assets and liabilities of MCO, the Massachusetts College of Optometry Building Trust and the Optometric Realty Trust.

Since July 1, 1970, the college was able to meet its financial obligations by means of its current yearly income, by use of its accumulated surplus from previous years, and by gifts and grants, with special reliance on the federal distress grants that totaled \$611,649 through June of 1974. However, as of June 30, 1975, the college was in a current fund deficit of \$254,321 and a physical plant fund deficit of \$4,817.

In the fiscal year ending June 30, 1975, a request for another distress grant, in the amount of \$249,579, was submitted by MCO to the federal government. To the surprise of the college it was denied, and the institution was informed of the decision only at the close of the fiscal year. As a result of this decision and since the college has no other sources for major funding, the institution is in an extremely precarious financial position.

It appears that unless additional unrestricted cash funds are obtained in the immediate future the Massachusetts College of Optometry will have serious difficulties in meeting its financial obligations.

TABLE VI-8
MASSACHUSETTS COLLEGE OF OPTOMETRY
REVENUE AND EXPENDITURES
ACTUAL FOR TEN YEARS, FY 1966-75 - BUDGETED FOR FOUR YEARS, FY 1976-79

Fiscal Year	Number of Students	Revenue (1) detailed on Supp. A		Expenditures detailed on Supp. B		Surplus or Deficit	
		Total	Per Student	Total	Per Student	Amount	Per Student
<u>Actual</u>							
1966	141	\$ 176,784	\$ 1,253	\$ 150,098	\$ 1,064	\$ 26,686	\$189
1967	153	249,691	1,631	168,988	1,104	80,703	527
1968	170	347,348	2,043	194,907	1,146	152,441	897
1969	201	427,610	2,127	283,256	1,409	144,354	718
1970	178	699,310	3,928	799,445	4,491	(100,135)	(563)
1971	200	944,589	4,722	1,056,755	5,283	(112,166)	(561)
1972	223	1,298,945	5,824	1,300,146	5,830	(1,201)	(6)
1973	256	1,460,826	5,706	1,469,324	5,739	(8,498)	(33)
1974	282	1,480,341	5,249	1,509,859	5,354	(29,518)	(105)
1975	283	1,499,095	5,297	1,661,026	5,869	(161,931)	(572)
<u>Budget (2)</u>							
1976	300	1,511,000	5,036	1,793,000	5,976	(282,000)	(940)
1977	300	1,737,000	5,790	1,927,000	6,423	(190,000)	(633)
1978	300	1,913,000	6,376	2,055,000	6,850	(142,000)	(474)
1979	300	1,970,000	6,567	2,188,000	7,293	(218,000)	(726)
<u>Budget (3)</u>							
1976	300	2,628,000	8,760	2,628,000	8,760	Balanced Budget	
1977	300	3,046,000	10,153	3,046,000	10,153	Balanced Budget	
1978	300	3,125,000	10,417	3,125,000	10,417	Balanced Budget	
1979	300	3,316,000	11,053	3,316,000	11,053	Balanced Budget	

Notes: (1) Revenue includes the following distress grants - FY 72, \$228,948; FY 73, \$235,073 and FY 74, \$147,628 for a total of \$611,649 during this three-year period.

(2) Represents continued operation at the present location at the same level of operation, but with an inadequate budget.

(3) Represents budget which the President of MCO considers to be adequate for continued operation at the same location.

TABLE VI-8, SUPPLEMENT A
MASSACHUSETTS COLLEGE OF OPTOMETRY
INCOME PER STUDENT
ACTUAL FOR TEN YEARS FY 1966-75 - BUDGET FOR FOUR YEARS FY 1976-79

	Number of Students	Student Tuition		Clinical Income		Gifts, Endowment, and Auxiliary Income (2)		State Support		Federal & State (3)		Total Income	
		Amount	Per Student	Amount	Per Student	Amount	Per Student	Amount	Per Student	Amount	Per Student	Amount	Per Student
Actual													
1966	141	\$ 147,280	\$1,044	\$ 26,384	\$ 187	\$ 3,120	\$ 22			\$ -0-	\$ -0-	\$ 176,784	\$1,253
1967	153	171,163	1,118	34,393	224	4,481	29			39,654	260	249,691	1,631
1968	170	201,687	1,186	36,514	215	6,386	38			102,761	604	347,348	2,043
1969	201	196,314	1,977	43,577	217	6,719	34			181,000	900	427,610	2,127
1970	178	262,969	1,477	65,159	366	106,370	598			264,812	1,481	699,310	3,928
1971	200	348,652	1,743	109,389	547	13,686	68			472,862	2,364	944,589	4,722
1972	223	323,497	1,451	173,052	776	101,819	456			700,577	3,141	1,298,945	5,824
1973	256	525,992	2,055	240,131	938	32,152	125			662,551	2,588	1,460,826	5,706
1974	282	689,797	2,446	289,181	1,026	29,542	104			471,821	1,673	1,480,341	5,249
1975	283	742,919	2,625	261,297	924	28,652	101			466,227	1,647	1,499,095	5,297
Budget (1)													
1976	300	850,000	2,833	340,000	1,133	61,000	204	\$ 50,000	\$166	210,000	700	1,511,000	5,036
1977	300	970,000	3,233	380,000	1,267	97,000	324	100,000	333	190,000	633	1,737,000	5,790
1978	300	1,080,000	3,600	400,000	1,333	123,000	410	160,000	533	150,000	500	1,913,000	6,376
1979	300	1,200,000	4,000	420,000	1,400	150,000	500	200,000	667	-0-	-0-	1,970,000	6,567

Notes: (1) Fiscal years 1976 through 1979 are based on budgets. The budgets FY 1976 through FY 1979 were developed by the President of MCO, and are based on continued operation at the same location, at the same level of operation and with a maximum enrollment of 300 students.

(2) Gifts, Endowment portion:

1966	\$ 755.	1971	\$ 6,743.
1967	718.	1972	7,146.
1968	2,105.	1973	6,569.
1969	25.	1974	6,023.
1970	3,230.	1975	18,094.

(3) Federal support consists of capitation, special project and basic improvement grants. FY 1972 through FY 1974 includes financial distress grants. This program has been phased out in FY 1974.

TABLE VI-8, SUPPLEMENT B
MASSACHUSETTS COLLEGE OF OPTOMETRY

COST PER STUDENT
ACTUAL FOR TEN YEARS, FY 1966-75 - BUDGET FOR FOUR YEARS, FY 1976-79

	Number of Students	<u>Instruction</u>		<u>Clinical (1)</u>		<u>Total</u>	
		Expenditure	Cost per Student	Expenditure	Cost per Student	Expenditure	Cost per Student
<u>Actual</u>		\$	\$	\$	\$	\$	\$
1966	141					150,098	1,064
1967	153					168,988	1,104
1968	170					194,907	1,146
1969	201					283,256	1,409
1970	178					799,445	4,491
1971	200					1,056,755	5,283
1972	223	1,093,104	4,902	207,042	928	1,300,146	5,830
1973	256	1,004,682	3,924	464,642	1,815	1,469,324	5,739
1974	282	1,108,254	3,930	401,605	1,424	1,509,859	5,354
1975	283	1,180,135	4,170	480,891	1,699	1,661,026	5,869
<u>Budget (2)</u>							
1976	300	1,224,200	4,080	568,800	1,896	1,793,000	5,976
1977	300	1,348,900	4,496	578,100	1,927	1,927,000	6,423
1978	300	1,438,500	4,795	616,500	2,055	2,055,000	6,850
1979	300	1,531,600	5,105	656,400	2,188	2,188,000	7,293

Notes: (1) The expenditures related to clinical operations were not separately accounted for and so reflected on Operating Statements FY 1966-71.

(2) Fiscal years 1976 through 1979 are based on budgets. The budgets for FY 1976 through 1979 were developed by the President of MCO and are based on continued operation at the same location, at the same level of operation, and with a maximum enrollment of 300 students.

TABLE VI-8, SUPPLEMENT C
MASSACHUSETTS COLLEGE OF OPTOMETRY
ANALYSIS OF BUDGET FOR FISCAL YEARS 1976 THROUGH 1979*

Fiscal Year	Number of Students	REVENUE				Gifts, Endowment and Auxiliary Income				Capitation (1)		Total Income		Space and Alteration Cost (2)
		Student Tuition		Clinical Income		Amount		Per Student		Amount		Per Student		
		Amount	Per Student	Amount	Per Student	Amount	Per Student	Amount	Per Student	Amount	Per Student	Amount	Per Student	
1976	300	\$ 870,000	\$ 2,900	\$380,000	\$1,267	\$ 75,000	\$250	\$1,303,000	\$4,343	\$2,628,000	\$ 8,760	\$ -0-		
1977	300	985,000	3,283	440,000	1,467	125,000	417	1,490,000	4,967	3,040,000	10,134	80,000		
1978	300	1,100,000	3,667	510,000	1,700	160,000	533	1,355,000	4,517	3,125,000	10,417	128,000		
1979	300	1,220,000	4,067	520,000	1,733	195,000	650	1,381,000	4,603	3,316,000	11,055	144,000		

Fiscal Year	Number of Students	EXPENDITURES				Total Expenditures	
		Education		Clinical		Per Student	
		Amount	Per Student	Amount	Per Student	Amount	Per Student
1976	300	\$2,298,000	\$7,660	\$330,000	\$1,100	\$2,628,000	\$ 8,760
1977	300	2,680,000	8,934	360,000	1,200	3,040,000	10,134
1978	300	2,785,000	9,283	340,000	1,134	3,125,000	10,417
1979	300	2,986,000	9,953	330,000	1,100	3,316,000	11,053

* Based upon a level of operation at same location with adequate financial resources.

- Notes: (1) The President of MCO did not indicate who would provide Capitation Funds, the federal or the state governments.
- (2) The President of MCO advised that the College would have some space problems and might need to include these higher alteration costs in a capital budget. Sources of funds for these capital outlays have not been provided for.

TABLE VI-9
MASSACHUSETTS COLLEGE OF OPTOMETRY
COMPARISON WITH OTHER INDEPENDENT COLLEGES AND WITH UNIVERSITY-AFFILIATED COLLEGES, 1973-74 (1)

Colleges	Number of Students	Revenue		% of Federal Support	Expenditures	
		Amount	Per Student		Amount	Per Student
Massachusetts College of Optometry (2)	282	\$1,426,015	\$ 5,057	41.3	\$1,431,743	\$ 5,077
<u>INDEPENDENT</u>						
Illinois College of Optometry	516	2,016,126	3,907	23.6	1,626,930	3,153
Pennsylvania College of Optometry	513	2,009,370	3,917	20.2	2,043,885	3,984
Southern California College of Optometry	280	2,596,617	9,274	68.3	2,596,617	9,274
Southern College of Optometry	568	2,783,208	4,900	15.5	2,286,943	4,026
<u>UNIVERSITY-AFFILIATED</u>						
University of Alabama in Birmingham (3)	86	943,984	10,976	41.5	943,984	10,976
School of Optometry						
University of California, Berkeley	221	1,773,020	8,023	32.6	1,773,020	8,023
School of Optometry						
University of Houston	263	1,571,272	5,974	18.3	1,543,350	5,868
College of Optometry						
Indiana University	258	1,357,056	5,260	25.5	1,357,056	5,260
Division of Optometry						
State University of New York (3)	65	1,071,061	16,477	19.6	831,034	12,631
College of Optometry						
The Ohio State University	210	1,290,179	6,144	20.0	1,224,912	5,833
College of Optometry						
Pacific University						
College of Optometry	280	1,293,619	4,620	41.2	1,342,862	4,796

Notes: (1) The above financial data were obtained from 1973-74 Annual Survey of Optometric Educational Institutions conducted by the Association of Schools and Colleges of Optometry.

(2) Massachusetts College of Optometry Revenue and Expenditures were submitted to ASCO prior to year end closing and are at slight variance with the actual operating statement.

(3) The creation of the School of Optometry at the Medical Center, University of Alabama in Birmingham, was authorized by the state legislature in 1967. Its first class was admitted in September 1969. Full and steady-state enrollment is anticipated to begin in 1975. The School of Optometry at the State University of New York was founded in 1970. Its first class was admitted in September 1971. Therefore, the revenue and expenditure total amounts and per student amounts for these two institutions should not be used in comparisons with other established schools of optometry.

TABLE VI-10
MASSACHUSETTS COLLEGE OF OPTOMETRY
BALANCE SHEET, JUNE 30, 1969

ASSETS

CURRENT ASSETS:

Cash in Banks	94,887
Certificate of Deposit	100,000
Cash on Hand	125
Accounts Receivable	979
Notes Receivable	3,850
Loans Receivable - Optometric Program Fund	2,900
Inventory of Books and Supplies	<u>7,646</u>

TOTAL CURRENT ASSETS

210,387

FIXED ASSETS:

	Cost	Accumulated Depreciation	Net
Real Estate - Newbury Street	224,976	64,035	160,941
Real Estate - Commonwealth Avenue	39,021	11,360	27,661
Furniture and Fixtures	209,072	73,210	135,862
Library	<u>22,133</u>	<u>17,119</u>	<u>5,014</u>

TOTAL FIXED ASSETS

495,202165,724

329,478

FUND ASSETS:

Library Fund:			
Cash		1,125	
Securities		<u>1,611</u>	2,736
Student Loan Funds:			
Cash		575	
Accounts Receivable		<u>240</u>	815
Dr. Ralph H. Green Gold Medal Award Fund - Cash			<u>733</u>

TOTAL FUND ASSETS

4,284

OTHER ASSETS:

Advances to Optometry Realty Trust	150,034	
Advance to National Student Defense Loan Fund	210	
Advance to Health Professions Student Loan Fund	<u>5,859</u>	156,103

TOTAL ASSETS

700,252

LIABILITIES AND CAPITAL

CURRENT LIABILITIES:

Accounts Payable	15,733
Employees' Taxes Withheld	2,955
Employees' Pension Funds Withheld	67
Student Tuition Deposits	<u>27,390</u>

TOTAL CURRENT LIABILITIES

46,145

CAPITAL:

Rubin and Anna Bram Library Fund	2,736
Student Loan Fund	815
Dr. Ralph H. Green Gold Medal Award Fund	733
Capital Surplus	<u>649,823</u>

TOTAL CAPITAL

654,107

TOTAL LIABILITIES AND CAPITAL

700,252

TABLE VI-11
MASSACHUSETTS COLLEGE OF OPTOMETRY
COMBINED BALANCE SHEET AS OF JUNE 30, 1975 AND 1974

Assets		Liabilities and Fund Balances	
Current funds:		Current funds:	
Unrestricted:		Unrestricted:	
Cash	1975 12,781	1974 9,420	1975 1,347
Inventories	22,016	13,265	12,259
Accounts receivable, patients, less allowances; 1975-\$5,800; 1974-\$5,300	16,743	28,907	9,288
Accounts receivable, other	42,761	51,484	50,000
Prepaid and sundry items	8,709	5,781	124,066
Total unrestricted	103,010	108,857	9,607
Restricted:			48,481
Cash	239	3,875	45,067
Patents	1,484	1,428	72,008
Total restricted	1,723	5,303	(254,321)
Total current funds	104,733	114,160	103,010
Loan funds:			
Cash	4,188	13,798	1,518
Loans to students and faculty, less allowances; 1975-\$123; 1974-\$218	549,010	446,902	205
Due from unrestricted current funds	37,950	15,365	1,723
Sundry receivables	8,610	4,885	104,733
Total loan funds	599,758	480,950	114,160
Endowment and similar funds:			
Cash	18,362	7,164	504,396
Investments	1,611	1,611	399,493
Due from unrestricted current funds	350	350	29,196
Due from plant fund	100	100	66,166
Total endowment and similar funds	19,973	9,225	599,758
Plant funds:			
Retirement of indebtedness:			
Cash	5,290	1,503	19,973
Accounts receivable	38,635	29,452	38,635
Due from unrestricted current funds	8,635	-	3,742
Total retirement of indebtedness	52,560	30,955	10,460
Investment in plant:			
Land - Newbury Street	462,510	462,510	2,169
Land and Buildings - educational facilities	1,140,708	1,140,708	100
Building alterations	108,715	101,540	15,000
Furniture and fixtures	213,072	213,072	(4,817)
Library	22,133	22,133	52,560
Deferred charges	14,127	14,127	(11,226)
Total investment in plant	1,981,263	1,954,090	30,955
Total plant funds	2,013,823	1,985,045	

(see Appendix B for explanatory notes to Combined Balance Sheet.)

CHAPTER VII

FINANCIAL AND COST ESTIMATES OF OPTOMETRIC, OSTEOPATHIC AND PODIATRIC EDUCATION

As has been indicated throughout the report, this project is concerned primarily with optometric education in New England, and specifically with the Massachusetts College of Optometry (MCO). Consistent with this approach, the enrollment, manpower, and financial conditions of MCO have been analyzed in some detail in Chapter VI. From the information presented in that chapter, one may readily conclude that the institution requires an improved base of financial support. Since such a base might be developed, in addition to gaining other major advantages, by integrating the optometric education provided at present by MCO into an academic health center, it is necessary to have some estimates of the costs, both capital and operating, for a school of optometry on a different site than the one occupied by MCO. Furthermore, since professional education is not offered at the present time in New England for either osteopathy or podiatry, some estimates of costs are also provided for schools in these fields of study.

The estimates in this section are based primarily on several studies that have been completed within the past two years. The first is *Costs of Education in the Health Professions* (January 1974), the report from a study conducted by the Institute of Medicine of the National Academy of Sciences under a charge from the United States Congress. The professions reviewed in this report were dentistry, medicine, nursing, optometry, osteopathy, pharmacy, podiatry, and veterinary medicine.

Table I-4 in Chapter I presents from the Institute of Medicine (IOM) study the average annual education costs per student by profession for the year 1972-73. Both optometry and podiatry presented some objections to the results of this analysis because each profession claimed that its cost of education were somewhat underestimated and did not indicate adequate financial support for their respective programs of study. Therefore, each of these professions sponsored a separate study because, as the report of the one for optometry stated "...historical costs, and therefore, educational practices and policies, ...reflect historical funding patterns rather than what might have occurred under different funding patterns or what is deemed to be desirable by the professional education community." These two reports provide the basis for some of the projections included in this chapter.

In November 1973 the American Association of Colleges of Podiatric Medicine issued *A Constructed Cost Study of Podiatric Education*, which is the report of an analysis conducted under contract by the Fore Consultants with the advice of a committee of professionally competent persons. In addition, the American Optometric Association and the Association of Schools and Colleges of Optometry issued an undated report in the winter of 1974, *Optometric Education: A Constructed Cost Study*, also conducted by the Fore Consultants on a similar basis to the one in podiatry.

The profession of osteopathy has not sponsored a separate constructed cost study. However, the costs of constructing a new school of osteopathic medicine are estimated to be similar to those of a school of allopathic medicine excluding from the estimates the costs of constructing a teaching hospital. Therefore, in this chapter we are employing figures for allopathic medical schools based on a study completed several years ago and, in addition, reference is made to the construction costs of the recently established colleges of allopathic medicine at the universities of Connecticut and Massachusetts, and to costs for colleges of osteopathic medicine recently created in Oklahoma and West Virginia.

ESTIMATED CAPITAL INVESTMENT REQUIRED FOR SEPARATE COLLEGES OF OPTOMETRY, OSTEOPATHY AND PODIATRY

For purposes of reference only - not intended for actual planning - the estimated capital investment required to construct a new, separate, and independent college of optometry is shown in Table VII-1. The total cost of nearly \$13 million is extracted from the Fore study and is intended to provide facilities for the education of 330 students. No provision in this estimate is made for acquisition and preparation of land, nor for amortization of any debt that may be incurred, nor depreciation of fixed assets.

Table VII-2 presents similar estimates for a college of podiatric medicine. For a student enrollment of 400, the projected construction costs at the time of the study were over \$17 million.

In the case of the projected school of optometry, the estimated construction cost per gross square foot (GSF) was \$58.00 and in podiatric medicine \$53.26. These figures may be compared to the estimates presented by Clarence R. Cole, D.V.M., in his *A Plan for the New England College of Veterinary Medicine* (1974). His overall estimated average construction costs, including fixed equipment, for a college of veterinary medicine were \$53.19 per gross square foot. Because of inflation he added the qualification that a delay of five years in construction might increase the costs by as much as 69 percent.

TABLE VII-1

ESTIMATED FACILITY CONSTRUCTION COST
FOR AN INDEPENDENT COLLEGE OF OPTOMETRY

	Gross Square Feet	1973 Const. Cost per GSF	Total Cost	Cost of Original Installation of Fixtures and Equipment <i>Percentage</i>	Amount
Offices and classrooms	15,645	\$53.	\$829,185	15.0	\$124,378
Library, instructional communications	13,650	52.	709,800	25.0	177,450
Auditorium	3,750	44.	165,000	-	-
Laboratories and clinic	106,070	64.	6,788,480	25.0	1,697,120
Faculty, student lounges, bookstore	5,110	58.	296,380	-	-
Other	78,121	53.	4,140,413	15.0	621,062
	<u>222,346</u>	<u>Ave \$58.</u>	<u>\$12,929,258</u>		<u>\$2,620,010*</u>

*Annual equipment repair and replacement cost: 10% of \$2,620,010 = \$262,000

Source: *Optometric Education: A Constructed Cost* (Washington, D.C.: The Fore Consultants, undated).

TABLE VII-2
ESTIMATED FACILITY CONSTRUCTION COST
FOR AN INDEPENDENT COLLEGE OF PODIATRIC MEDICINE

	Gross Square Feet	1973 Const. Cost per GSF	Total Cost	Cost of Original Installation of Fixtures and Equipment Percentage Amount
Office space	20,990	\$53.05	\$1,113,520	15.0 \$167,028
Classrooms	8,800	53.05	466,840	15.0 70,026
Laboratory, clinic	143,450	53.05	7,610,023	15.0 1,141,503
Library, instructional communications	19,490	47.50	925,775	15.0 138,866
Miscellaneous	122,520	54.20	6,640,584	15.0 996,088
Faculty, student support	6,093	58.14	354,247	15.0 53,137
Auditorium	5,000	54.20	271,000	15.0 40,650
	<u>326,343 Ave</u>	<u>\$53.26</u>	<u>\$17,381,989</u>	<u>15.0 \$2,607,298*</u>

*Annual equipment repair and replacement cost: 10% of \$2,607,298 = \$260,730

Source: *A Constructed Cost of Podiatric Education* (Washington, D.C.: The Fore Consultants, November 1973).

The influence of inflation and other factors can be perceived in the following figures relating to the construction of allopathic medical schools. In September 1972 the *Journal of Medical Education* published a study, entitled "New Resources for Medical Education: Start-up Expenditures in 22 New U.S. Medical Schools." This study indicated that the median size of permanent clinical science buildings, hospitals, and clinics had been 465,000 gross square feet at a median cost of \$19.5 million, or \$40.86 average per square foot. In comparison, the medical centers at the University of Connecticut in Farmington, and the University of Massachusetts in Worcester, are costing an estimated \$100 million and \$130 million respectively for construction.

The medical science center in Worcester, which will include a 400-bed hospital to be constructed at an estimated cost of \$53 million, is still under construction, while the center at Farmington is completed with the exception of the installation of some equipment.

The University of Connecticut has made provision for a total undergraduate enrollment of 512 students - 320 medical and 192 dental - and 240 full-time and 400 part-time faculty members. A 200-bed hospital, as well as outpatient dental and medical facilities are also provided in a total space of 1,300,000 gross square feet. The average costs for construction were about \$55 per gross square foot for the educational facilities and \$68 per gross square foot for the hospital. It should be noted that the contract for the latter was signed two years after the contract for the educational facilities. If the contracts were signed at this time the average costs would undoubtedly be closer to \$100 per gross square foot.

For further purposes of comparison, it is interesting to note the costs for the establishment of the Greenbrier College of Osteopathic Medicine in West Virginia, which has enrolled its first class of 36 students. The former campus of the Greenbrier Military School was purchased at a price of \$455,000, and is being converted and rehabilitated for professional educational purposes at an additional cost of \$2,175,000, including \$450,000 for moveable equipment. When the rehabilitation is completed, approximately 132,000 gross square feet will be available for an eventual total student body of 400 undergraduate osteopathic medical students. Affiliations are being established with hospitals located primarily in rural areas since it is anticipated that this will be the location of practice for most of the graduates of this college. The initial start-up operating costs have amounted to approximately \$500,000 for the first year.

The Oklahoma College of Osteopathic Medicine and Surgery admitted its first class of 36 students in 1974, and plans, when in full operation, to have an undergraduate enrollment of 375 students in a three-year course of study with a faculty of 50 full-time equivalents. The college is being operated as an independent unit, supported with public funds within the Oklahoma System of Higher Education.

At present its activities are being conducted in two structures: a school building of 14,000 gross square feet for which \$270,000 was spent for conversion and rehabilitation and a former office building in which 12,000 gross square feet is rented on a yearly basis.

A federal grant of \$4.5 million and \$1.5 million in state funds are meeting the costs of constructing and equipping an education and science building of 100,000 gross square feet. This new building is scheduled for completion in 1977, at which time the two structures now being used may no longer be needed by the college. Affiliations are being developed with hospitals in Enid, Oklahoma City, and Tulsa.

ESTIMATED ANNUAL OPERATING EXPENSES REQUIRED FOR SEPARATE COLLEGES OF OPTOMETRY AND PODIATRY

Table VII-3 presents the estimates developed by the Fore studies for the annual operating costs for separate and independently operated colleges of optometry and podiatric medicine. In these studies the average cost is \$14,184 per optometric student and \$13,579 per podiatric student.

To appreciate the implications of these optimum projections one should review them in comparison with the yearly costs per student reported by the Institute of Medicine study that was based on an analysis of actual costs at selected institutions (MCO was not included in this study). Table VII-4 presents these results on a comparative basis with the Fore projections for optometry and podiatry, as well as with the actual average costs per student for that year at the Massachusetts College of Optometry.

The disparity between the IOM and the Fore figures can be attributed largely to the basis on which the Fore analyses were made. They were based on the most desirable conditions: optimum number of faculty and supporting personnel, full complement of administration, ideal physical facilities, including all necessary equipment and conveniences. For example, the Fore study for podiatric medical education provided for a president, an executive vice president, and four vice presidents (academic affairs, business affairs, development, and student affairs) with a total budget for their salaries of \$235,000, excluding health, retirement and other benefits.

In addition, the projected personnel included a director, supervisor, and other personnel for the laboratories; medical records librarian and patient registrars for the outpatient department; physical therapist, pharmacist, orthotist, nurses, and x-ray personnel for clinical services; social workers; as well as faculty and other support personnel.

TABLE VII-3

ESTIMATED ANNUAL OPERATING COSTS FOR
INDEPENDENTLY OPERATED COLLEGES OF
OPTOMETRY AND PODIATRIC MEDICINE

	Optometry	Podiatry
Enrollment ¹	330	400
Out-patient clinic operation (weeks)	52	52
Instruction:		
Faculty salaries	\$1,461,500	\$1,589,250
Instructional support staff salaries	530,800	487,900
Fringe benefits (22% of salaries) ²	359,106	478,973
Expendible materials and supplies	115,500	140,000
Total instructional cost	\$2,466,906	\$2,796,123
General and administrative:		
Executive and administrative salaries	\$ 593,400	\$ 605,000
Non-instructional support staff	231,800	276,000
Fringe benefits (22% of salaries) ²	173,348	193,820
Travel and institutional expenses	293,000	315,700
Total general and administrative costs	\$1,291,548	\$1,390,520
Student services and financial aid costs	\$ 142,450	\$ 223,960
Physical plant operating costs - \$2.33 per sq. ft.	\$ 518,066	\$ 760,379
Annual equipment repair and replacement cost	\$ 262,000	\$ 260,730
Total annual operating cost	\$4,680,970	\$5,431,712
Cost per student	\$ 14,184	\$ 13,579

¹330 enrollment in College of Optometry includes 300 undergraduates (75 in each class), 20 master's degree candidates, and ten doctoral degree candidates. 400 enrollment in College of Podiatric Medicine includes 100 in each class.

²Applicable only to full-time salaries.

Sources: *Optometric Education: A Constructed Cost* (Washington, D.C.: The Fore Consultants, undated).

A Constructed Cost of Podiatric Education (Washington, D.C.: The Fore Consultants, November 1973).

TABLE VII-4
AVERAGE AND RANGE OF ANNUAL EDUCATION COSTS
PER STUDENT BY PROFESSION, 1972-73

Profession	Average	Range
Medicine	\$12,650	\$6,900 - 18,650
Osteopathy	8,950	6,900 - 12,350
Dentistry	9,050	6,150 - 16,000
Optometry	4,250	3,750 - 4,750
Pharmacy	3,550	1,600 - 5,750
Podiatry	5,750	4,400 - 6,700
Veterinary Medicine	7,500	6,050 - 10,500
Nursing		
Baccalaureate	2,500	1,200 - 4,050
Associate	1,650	1,050 - 2,150
Diploma	3,300	1,850 - 4,850

Note: Dollars are rounded to nearest \$50.

Source: *Costs of Education in the Health Professions*, Institute of Medicine (Washington, D.C.: National Academy of Sciences, January 1974).

Actual Education Costs
per student at MCO
in 1972-73 (not
included in IOM study)

\$ 5,739

Average Annual Education
Costs per Student
Projected by the
Fore Consultants

Optometry

\$14,184

Podiatry

\$13,579

Table VII-5 provides a statistical comparison of the personnel projections of the two Fore studies with the actual personnel at MCO during the academic years 1972-73 and 1974-75.

TABLE VII-5

FORE STUDIES PROJECTIONS FOR PERSONNEL IN
SCHOOLS OF OPTOMETRY AND PODIATRY IN
COMPARISON WITH MCO, 1972-73 AND 1974-75

Personnel Classification	Optometry	Podiatry	MCO	
			1972-73	1974-75
Faculty, full-time equivalent 12-month year	52	69	31.3	29.7
Instructional support staff	45	57	9.5	11.3
Executive & administrative staff	33	35	9.1	9.1
Non-instructional support staff	<u>18</u>	<u>30</u>	<u>7.5</u>	<u>11.3</u>
Total employed personnel	148	191	57.4	61.4
Student enrollment	330	400	256*	285*

*Does not include students enrolled in technician program.

Accepting the proposition that the educational offering at MCO could be further strengthened by increasing the complement of administrative, faculty, and support personnel, it does not necessarily follow that a good program can be conducted only by maintaining a ratio of personnel to students that has been proposed in the Fore studies for independently operated institutions.

The remainder of this chapter addresses the issue of good education in optometry, with references to osteopathy and podiatry, in an academic health center where basic costs may be shared for more cost efficiency.

SAVINGS IN CAPITAL INVESTMENT FOR A COLLEGE OPERATED AS PART OF AN ACADEMIC HEALTH CENTER

Because of the number of variables in joint use of physical facilities and equipment, and the various possibilities in provision of common services, reductions in overhead costs, coordination in academic offerings, and clinical services, it is impossible to predict with accuracy the financial savings that may result when several health professional educational programs are offered in one academic health center in comparison to their independent operations on separate campuses. Furthermore, this project is a feasibility study and is not intended to draw specific financial

conclusions or make detailed recommendations. On the other hand, even cursory reflection leads one to conclude that joint operation of a school of optometry (or a school of osteopathic medicine or of podiatric medicine) within an academic health center will lead not only to a strengthened academic program but also to financial savings in both capital investment and operating costs.

Some general conception of the savings that might be attained by sharing of some facilities may be gleaned from a list of those that could be commonly used by more than one professional school: central administration, business operations, plant maintenance, power station, student services, auditorium, some classrooms, computer operations, faculty and staff lounges, graphic arts, instructional communications, animal rooms, and library. In his recent report on veterinary medical education, Dr. Cole has stated that "a medical library ordinarily duplicates two-thirds of the holdings of a veterinary medical library; therefore, a joint library would provide convenience as well as savings in costs." This same observation could apply equally to the fields of optometry, osteopathy and podiatry.

The Fore projections provide 222,346 gross square feet for an independent school of optometry and 326,343 for a similar school of podiatric medicine. This is the equivalent of 674 gross square feet per optometric student and 816 gross square feet per podiatric student. In contrast, the Massachusetts College of Optometry has at present a total of 67,038 gross square feet in its several converted buildings, which are most uneconomical in availability and suitability of useable space. Only 39,721 net square feet can be used for offices, classrooms, lecture halls, seminar rooms, laboratories, clinics, library, computer center, graphic arts, machine shop, and maintenance. Making a generous allowance for hallways, stairs, and other commonly used space in the 67,038 gross square feet but discounting space that is not useable, it could be assumed that approximately 50,000 square feet are directly and indirectly related to educational purposes. Such an assumption would indicate that MCO at present has approximately 175 gross square feet for each of its current 285 students. This does not include space employed for clinics at other locations where MCO students obtain some of their clinical training.

These figures again demonstrate that good education can be provided in space that is neither as extensive nor as specialized as proposed in the Fore reports. On the other hand, the space available at present to MCO is deficient in quantity, suitability, and maintenance, and must be improved to support adequately the education that should be available in the future to optometric students in a college in New England.

As will be recounted in the next chapter, the New England Foundation for Osteopathic Medicine is endeavoring to develop a program for osteopathic education that will entail relatively small capital investment costs, far less than the multi-millions of dollars that have been expended in recent years in colleges of allopathic medicine.

SAVINGS IN ANNUAL OPERATING COSTS FOR A COLLEGE OPERATED AS PART OF AN ACADEMIC HEALTH CENTER

From the enumeration of the major physical facilities in an academic health center that might be shared by more than one professional school one may readily conclude that there would be savings in annual operating costs in such a joint educational endeavor. These savings would begin with the central administration; a president, an executive vice president, and four other vice presidents would not be required for each professional school. The business offices, plant maintenance and power plant could serve all schools, as could the library, computer operations, animal rooms, graphic arts, instructional communication, and other similar supporting activities. For the annual costs of these operations it has been estimated that between 15 and 25 percent savings could be expected each year when schools are jointly operated.

These anticipated savings are exclusive of instructional costs. It has often been assumed that coordinated educational programs for different professional schools would also lead to a reduction in actual instructional expenses. As indicated in Chapter V, this does not necessarily follow. In the first place, it is neither easy, nor always appropriate, to consolidate the faculties of the different schools and combine departments. In the second place, faculty salaries in universities and in academic health centers are usually higher than those paid by independent professional schools. As a result, when the latter are affiliated with or incorporated into the former institutions, salary schedules are adjusted to conform to the higher scale of salary payments and fringe benefits. This adjustment incurs an increase in annual costs directly related to education, a cost that many educators and practitioners in the professions believe is desirable, especially since it is accompanied by an enriched educational program for all students in the professional schools.

As described in Chapter VIII, the New England Foundation for Osteopathic Medicine is endeavoring to develop a school of osteopathic medicine in conjunction with an already established college or university. In doing so it is anticipating an operating budget for the first year amounting to \$300,000, and for the second year an operating budget of \$400,000, to provide for an initial enrollment of 50 students in the basic science courses. These figures make no provision for construction of new facilities nor conversion of old facilities at the institution where the osteopathic college might be located.

If the Massachusetts College of Optometry should be affiliated with a university and/or academic health center, as seems desirable to many individuals, whether it might be in a manner similar to or different from that currently being considered for osteopathic medicine in New England, it will first be necessary to conduct an actual planning study. This would entail detailed analysis of requirements for personnel, space, facilities, equipment, and costs. A recommendation related to this type of activity is presented in Chapter X.

CHAPTER VIII

RECENT DEVELOPMENTS RELATING TO EDUCATION IN NEW ENGLAND FOR OPTOMETRY, OSTEOPATHY AND PODIATRY

As in other sections of the country, education in New England for the professions of optometry, osteopathy and podiatry has developed in a manner similar to allopathic medical education.

Although in the early history of this nation there were doctors of medicine, such as Benjamin Rush, who enjoyed well-deserved reputations for their professional competencies and knowledge, there were also many itinerant hawkers of medicinals and nostrums of dubious validity. During much of the nineteenth century, apprentice training for medicine was the primary method by which an individual gained knowledge and experience to practice a profession for which the licensure laws were innocuous in some states and non-existent in others. Success with several apprentices would encourage a physician to become an educational entrepreneur and establish a private school either by himself or in partnership with other physicians. Prospects for financial return from the relatively small investment required provided sufficient inducements so that by the early part of the present century, there were over 150 schools of medicine in existence throughout the country, most of them of inferior quality. It took the concerted efforts and the insistence of the American Medical Association, the Association of American Medical Colleges, and the Carnegie Foundation for the Advancement of Teaching to bring about improved medical education.

As a result of their influence, by 1920, the bogus and most of the inadequate medical schools were forced to close, leaving 85 allopathic medical schools in operation, including such pacesetter schools as those at Harvard and Johns Hopkins universities. At the present time, there are some 115 accredited schools of medicine, practically all of them associated with universities.

In their histories of development, optometry, osteopathy and podiatry have undergone a similar metamorphosis (see Chapter I). The establishment of privately owned schools was followed by the closing of some because of inadequacies and by the transformation of others into incorporated institutions operated not-for-profit. More recently, intensified efforts have been made to create new schools that are integrated into the operations of universities and of academic health centers. Such developments are taking place at the present time within these three health professions in New England.

OPTOMETRIC EDUCATION IN NEW ENGLAND

The Massachusetts College of Optometry (MCO) was founded under a different name in 1895 by Augustus A. Klein, a doctor of medicine, as a privately owned and operated institution "which will be purely optical in its achievements without coming in conflict with the medical profession, and yet, fill that gap between the physician and the optician." The Klein

Optical School, as it was originally known, was incorporated in 1901; in 1919 the name was changed to the Massachusetts School of Optometry, although it was still owned and operated at a profit by members of the Klein family.

In 1946, in response to economic, professional and social pressures similar to those to which medicine had earlier reacted, the institution was reorganized on a non-profit basis under the direction of a board of trustees. It is now located on a different site in converted Beacon Street townhouses. Since 1969, the Massachusetts College of Optometry has had new personnel in the administration and has placed greater emphasis on upgrading the quality of the academic and clinical education provided to the students.

Changes in the college have included improved but far from adequate facilities, strengthening of the faculty, establishment of some new clinics and improvements in the older ones, initiation of research activities, reorganization of the curriculum, and attention to the needs of practicing optometrists in the region for easier access to continuing education. Even though these changes have enriched the educational offerings of MCO, the administration and trustees recognize that a truly adequate program can be provided only by cooperation with or institutional integration into an academic health center. In pursuit of this objective, various approaches have been made to other institutions.

The current president of MCO accepted his appointment on the understanding with the board of trustees that the college would make every appropriate effort to achieve affiliation with a university having an academic health center already in operation or the potential for the development of one. In pursuit of that policy, explorations - direct and indirect, formal and informal - have been undertaken with different universities located within the eastern part of Massachusetts. These include Boston University, Harvard University, Northeastern University, Tufts University, and the University of Massachusetts at Worcester. With only one - Boston University (BU) - were discussions formalized to the extent of creating a committee to give ongoing, serious consideration to the possibility of affiliation.

The committee discussions conducted in 1972-1973 highlight the difficulties of affiliating an established college of optometry with an institution that includes a school of allopathic medicine. The discussions between BU and MCO seem now to be abandoned. At least they are in abeyance because of differences that appear at the moment to be irreconcilable (see Chapter II).

The success of any type of affiliation of MCO and BU, or any other university with a school of allopathic medicine located in Massachusetts, is naturally dependent upon a number of factors, not the least of which is the necessity for cooperative support from the Massachusetts Ophthalmological Society and the Massachusetts Society of Optometrists. The former is reluctant to support such affiliation without a prior definition, mutually accepted, that describes the scope of practice for which optometrists would be prepared. Such an agreement presumably involves some input of ophthalmologists into the design of the educational curriculum of optometric students.

For their part, the members of the Massachusetts Society of Optometrists appear unenthusiastic about the prospect of negotiations because of apprehension that these might lead to restrictions in their scope of practice. It would further appear that the recent introduction into the Massachusetts legislature of a bill (House No. 911) to permit the use of diagnostic pharmaceutical agents by optometrists, such as that enacted in Rhode Island in 1971, has exacerbated the tensions between the two societies. In the same legislative session, a bill (House No. 4980) was introduced which would mandate referral of patients with specified medical conditions by optometrists to ophthalmologists.

Subsequent to these developments, the request of MCO for a distress grant for the year 1974-75 in the amount of \$249,579 from the federal government had been denied. Although in decreasing amounts, similar grants had been awarded in each of the preceding three years for a total of \$611,649. Being advised of this unexpected decision, only a few days before the conclusion of the fiscal year ending June 30, 1975, MCO was forced to initiate severe measures to assure its continued survival.

As would be expected, these developments are some of the factors taken into account in the formulation of the conclusions and recommendations presented in the final two chapters of this report.

OSTEOPATHIC MEDICAL EDUCATION IN NEW ENGLAND

In contrast to optometry, which has had a professional college in New England for all of the past 80 years, osteopathy has not been taught in this region for over 30 years. The Boston Institute of Osteopathy was created in 1904, only 16 years after the first college of osteopathic medicine was founded in Kirksville, Missouri (see Chapter I). During World War I, the name was changed to the Massachusetts College of Osteopathy. The School of Medicine at Middlesex University was actually an offshoot of the Massachusetts College of Osteopathy, and the two institutions shared some clinical facilities, although each was operated as an independent institution. The Massachusetts College of Osteopathy lost its AOA approval during the 1920s and operated as an unrecognized college until 1942, when it was forced to close because it could no longer obtain state recognition. Since that time, a New England resident wishing to study osteopathy has been required to pursue such studies in another section of the country.

As the population of the six New England states has increased, so has the rate of attrition among osteopathic physicians (see Chapter III). Recent graduates of existing colleges of osteopathic medicine are not initiating practices in New England in sufficient numbers to replace the older physicians who are or will soon be leaving practice. These factors, combined with the possibility that enrollment at colleges receiving state support may be limited to qualified residents of those states, have concerned the members of the profession to the extent that they initiated steps to correct the situation.

Over the years, various individual doctors of osteopathy have discussed the possibilities of reestablishing a college of osteopathic medicine in New England. The first formal step toward this goal was taken in April 1971, at a meeting of some 50 interested individuals - osteopathic physicians, representatives of professional societies, and educators. Their consideration of what steps should be initiated led in time to the formation of the New England Foundation for Osteopathic Medicine, for which a charter was granted by the Commonwealth of Massachusetts in July 1973.

The by-laws of the foundation state that its purposes are "the promotion of osteopathic medical education, osteopathic medical research, and improvement of health care in osteopathic medical hospitals and related institutions." The purposes also include the granting of scholarships and financial support of osteopathic medical schools. The foundation has been granted tax exemption as a charitable organization and a full-time executive was appointed in July 1974.

Following the initial organizational meeting in 1971, and before the actual creation of the foundation, exploratory discussions were undertaken with several educational institutions regarding the possibility of affiliating a college of osteopathic medicine with one of them. The most extensive explorations have been pursued with Northeastern University with whose representative many issues have been discussed. These include funding, enrollment, institutional relationships, curriculum, faculty, library, laboratory facilities, clinical and hospital arrangements, administrative support, student health provisions, and relationships with the many health education programs that Northeastern conducts at the present time, such as nursing and pharmacy.

From these discussions, in which official representatives of the American Osteopathic Association have on occasion participated, certain proposals have emerged. One of these proposals provided that the New England Foundation for Osteopathic Medicine would contract with Northeastern University to provide teaching in the basic sciences in its facilities for students in their first two years of osteopathic study. The first class would be limited to approximately 50 students for admission in the fall of 1976.

In the spring of 1975 negotiations with Northeastern were discontinued, and explorations were resumed with several other academic institutions. These explorations led shortly to the announcement of a non-legally binding contract between the New England Foundation for Osteopathic Medicine and Saint Francis College in Biddeford, Maine. Pursuant to this contract, joint plans are to be developed for the establishment of a New England College of Osteopathic Medicine on the site of the college with admission of the first class planned for either the fall of 1976 or no later than the fall of 1977.

As part of the planning, Saint Francis, which has been a small, liberal arts, church-related institution, would reorient its educational program toward public and health related services concurrent with the establishment of the college of osteopathic medicine. The clinical training of the osteopathic students would be directed toward the provision of medical services in less populated regions of the Northeast.

One of the publications issued by the foundation had earlier commented on plans for clinical training in the following terms:

Ambulatory care will be emphasized so as to orient the student away from the hospital environment which has been implicated as the cause of a great increase in the cost of health care. The student will be encouraged to see the hospital as only one of the resources in the health care delivery system. Ambulatory care experience for the student will be balanced between rural and urban environment so as to indoctrinate the student to the potential of non-hospitalization care.

Hospital training and experience will be provided to the degree necessary to give the student information concerning the function and use of all categories of hospitals.

At the present time, there are five osteopathic hospitals in New England: three in Maine, one in Massachusetts, and one in Rhode Island, with a total of some 500 beds. It is anticipated that students will be employed in clinical training and, in addition, that students will be assigned to selected osteopathic physicians who will serve as preceptors to supervise the clinical education of individual students. It is thought that this type of program for the training of osteopathic practitioners would be both educationally sound and financially much less costly.

PODIATRIC MEDICAL EDUCATION IN NEW ENGLAND

In contrast to the histories of optometric and osteopathic medical education in New England, the history of podiatric medical education is slightly more involved. At one time or another, there were three schools of podiatry in this region, the last of which ceased operations a quarter of a century ago. This was the Beacon Institute which started in the early 1930s, later changed its name to the Massachusetts School of Chiropody, and subsequently was sold to a physician who could not make it operate as a financial success. It is estimated that approximately 200 podiatrists were educated at this institution before it closed in the 1950s.

During part of this period, the Middlesex College of Medicine and Surgery operated a Department of Chiropody whose approximately 650 graduates were eligible for licensure in Massachusetts and several neighboring states over a period of several years. Prior to the closing of Middlesex University, its podiatric students were transferred to Beacon so that they could have an opportunity to complete their professional studies. In addition to Beacon and Middlesex, there was also a college of podiatry operated for several years in the 1930s in Providence, Rhode Island. These New England institutions were not at any time accredited by the APA Council on Podiatric Education. In view of this fact, many of their graduates enrolled in postgraduate courses offered at accredited colleges of podiatric medicine in order to qualify for the Doctor of Surgical Chiropody (DSC) degree.

Following the closing of the New England institutions, the educational source of podiatrists for this region has been the colleges of podiatry located in other sections of the country, primarily the colleges in New York

and Pennsylvania. As noted in Chapters III and IV, this source has been insufficient to maintain an adequate supply of podiatric physicians in New England.

As with osteopathy, there has been some concern among podiatrists with the decreasing number of practitioners and the advancing average age of those in practice. On the other hand, no consensus has, as yet, emerged among the podiatric practitioners throughout New England for them to create a foundation, as in osteopathy, or to develop some concerted regional action on the part of the profession leading to the creation of a college of podiatric medicine. Individual podiatrists have expended effort, their own money, and time in pursuit of this educational goal, but these attempts have been sporadic and uncoordinated.

Through the efforts of the Massachusetts Podiatry Society, bills have been introduced during the past several sessions of the Massachusetts legislature that would authorize a study of the needs for and means of establishing a regional college of podiatry. The most recently introduced bill (Senate No. 1684) would authorize an investigation and study of the need for the establishment of a regional school of podiatric medicine at the University of Massachusetts Medical School at Worcester, but this approach has as yet not enjoyed the endorsement of the professional society of any state other than Massachusetts.

The New York College of Podiatric Medicine, in cooperation with the Center for Continuing Education at Northeastern University and the Massachusetts Podiatry Society, has this year (1975) made arrangements for the periodic use of facilities at Northeastern in order that the New York college would have space in which to offer courses in continuing podiatric education to practitioners in this region. Whether this relationship will lead to further types of educational cooperation is uncertain at this time. However, several factors should be noted.

In the past, Northeastern University had been approached on an informal basis regarding the possibility of creating a college of podiatric medicine within the university structure. For various reasons, nothing materialized from these explorations. It is also known that the New York College of Podiatric Medicine must contend with insufficient space for the teaching of basic sciences and is, therefore, limited in the number of students it can enroll during its first two years. On the other hand, its location in the center of the Harlem district provides an almost unlimited demand for clinical services and corresponding opportunities for the clinical training that is offered primarily in the last two years of the four-year curriculum. In view of these facts, it has been suggested that an inter-institutional cooperative program with one or more universities in New England might be developed in which the first two years of basic sciences would be provided in New England institutions, and the final two years of the professional program would be provided by the New York College of Podiatric Medicine.

VETERINARY MEDICAL EDUCATION IN NEW ENGLAND

Although veterinary medicine is not a part of the Health Sciences Research Project, it is appropriate to include reference to the current stage of developments following the publication in 1974 of the report prepared for the New England Board of Higher Education entitled - *A Plan for the New England College of Veterinary Medicine*.

Clarence C. Cole, professor of veterinary medicine at Ohio State University, who conducted this study, recommended that during 1975 and 1976, NEBHE make every effort to assist the New England states in increasing opportunities in veterinary medical education on an emergency basis "while simultaneously providing a permanent solution by coordinating the development of an interstate veterinary medical college to open in 1977." Such a facility would not only create a regional resource for additional Doctors of Veterinary Medicine (DVM) but would provide facilities for research and for the continuing education of the region's veterinarians.

Among other recommendations, that study suggests that the proposed college of veterinary medicine "utilize existing courses and facilities in related institutions and also enhance the development of the study of animal models of human disease in a health center." To fulfill this recommendation, the report identifies the optimum location for the proposed New England college of veterinary medicine as the site of the former Grafton State Hospital in Grafton, Massachusetts. In 1974, the Commonwealth of Massachusetts reserved these facilities and 1,100 acres of land for three years for the purpose of establishing a regional veterinary medical college. The Grafton site is a short distance from the University of Massachusetts Medical School in Worcester.

The Massachusetts offer of the site and the allocation of \$200,000 for planning, for site preparation and other preliminary tasks, is contingent upon the participation of at least three other New England states and upon the approval of NEBHE to serve as the legal vehicle for this interstate cooperative effort. The recommended alternative site for the college is the University of Connecticut at Storrs.

The construction cost of the college, if it were completed during or prior to 1977, is estimated to be approximately \$31.5 million. If the former Grafton State Hospital were chosen as the site for the college, costs for acquisition of land would not be incurred.

Although the study for veterinary medical education strongly suggests that any available federal funding be sought, it recommends that the regional college be supported primarily by state appropriations. Cost allocation among the participating states would be determined on the basis of proportionate population. The maximum enrollment of students from each state would be allocated in accordance with a similar formula.

The total anticipated annual operating costs to be provided by the six New England states at the time maximum enrollment is attained are estimated to be \$5.5 million, exclusive of tuition income.

Recently, the New England Board of Higher Education has investigated the feasibility of negotiating contracts for New England residents to attend the colleges of veterinary medicine in New York and Pennsylvania. As a result of these investigations NEBHE has negotiated a contract with the University of Pennsylvania for the admission of a limited number of veterinary medical students from New England in the fall of 1975. Although a few spaces are available for the 1975-76 academic year, competition from other sections of the country combined with the *high cost of these spaces* to the New England states indicates that success in the negotiations will still not provide a long-term solution for New England.

With provisions similar to those incorporated in the legislation enacted in 1974 by the Massachusetts legislature, bills endorsing the creation of the regional college of veterinary medicine at the Worcester-Grafton site have been introduced in the legislatures of Connecticut, Maine, New Hampshire, Rhode Island, and Vermont.

CHAPTER IX

CONCLUDING OBSERVATIONS AND ALTERNATIVES FOR OPTOMETRIC, OSTEOPATHIC AND PODIATRIC EDUCATION IN NEW ENGLAND

In accordance with the contract between the Health Resources Administration of the United States Public Health Service, which has provided the funding for the project, and the New England Board of Higher Education, which has sponsored the study, the Health Sciences Research Project has given primary attention to "the proposition that the Massachusetts College of Optometry should be organized, administered, and supported as a public New England regional facility." It has also given attention "to the value and feasibility of establishing, for the New England region, a horizontally integrated training and research facility encompassing related health professions" with initial consideration being given to the health professions of optometry, osteopathy and podiatry.

In pursuance of this assignment, considerable information has been collected and presented in the first eight chapters of this report. From the material, a number of basic assumptions and principles regarding optometric, osteopathic and podiatric education in New England have been culled.

This chapter is intended to provide a summary of the extensive information contained in the earlier chapters, and a statement of the basic principles that the author believes should govern a regional, publicly supported college of optometry in an integrated academic health center serving the New England states. The chapter concludes with the presentation of a series of alternatives for education in New England in the professional fields of optometry, osteopathy and podiatry.

SUMMARY OF INFORMATION ABOUT OPTOMETRIC, OSTEOPATHIC AND PODIATRIC EDUCATION IN NEW ENGLAND

There are two primary reasons for public concern with provision in New England for education in the health professions. The first, and most important, is the delivery of health care. Members of the health professions must receive appropriate education to be able to deliver the care that the public needs. The second reason for public concern is students' access to the education necessary to enter a health profession in which they wish to practice.

The following information presents a summary of facts related to the delivery of health care and students' access to education with regard to the professions of optometry, osteopathy and podiatry, which are the concern of this report.

A - MANPOWER

A1 - In all three fields, the average age of practitioners in New England is such that younger persons entering the professions are doing so in numbers insufficient to replace the older men and women who are or will be withdrawing from practice between now and the end of the century.

A2 - At a time of potential reduction in numbers of practitioners in these three fields, the total population of the region is and will be increasing, especially in the older age groups whose members require more health care.

A3 - It is predicted that when a program of national health insurance is effected, there will be an increase in demand for ambulatory health care, including the type of care that these three professions have historically provided.

A4 - New England has a smaller percentage of optometrists in the younger age groups in comparison with the older groups. However, the average age of optometrists in this region is only slightly higher than that of optometrists in the United States. The age distribution is primarily the result of a higher enrollment in the colleges of optometry which operated on an accelerated basis for a few years following World War II.

A5 - At present, the supply of professional personnel providing eye care in New England constitutes a better (i.e., lower) ratio of population per practitioner, both in optometry and in ophthalmology, than the average ratio for the nation. The vast majority of optometrists are in solo practice with practitioners reasonably well distributed geographically throughout New England. However, the low ratio of ophthalmologists is influenced by their concentration in more heavily populated areas of the region, especially in the eastern section of Massachusetts.*

A6 - For its source of optometrists, New England is heavily dependent upon the Massachusetts College of Optometry (MCO), as will be further noted in B3.

*A study initiated by the New England Council of Optometrists and funded by the National Institute of Health was conducted in 1969-70 by Samuel E. Wallace, Ph.D., then at Brandeis University and now Professor of Sociology at the University of Tennessee. It was published in November 1974, in mimeograph form by the University of Tennessee under the title, *New Englanders, Their Eyes, and Those Who Profess to Care for Them*. The author states - "There is current (sic) no identifiable need for additional optometrists beyond the number being added in New England" (page 50), and "There is need for additional manpower in ophthalmology in New England beyond the numbers now being added" (page 61).

Since reference to this document will probably be made by individuals seeking documentation to support points of view, note should be made that the research was conducted nearly five years before publication, the research was somewhat subjective, and the above quoted conclusions did not allow adequately for geographical distribution of practitioners, for financial costs in the education of optometrists versus ophthalmologists, and for potential changes in the system by which health care, especially eye care, may be provided in the future.

A7 - Although New England has a lower ratio of population per physician (allopathic and osteopathic physicians combined) than the average ratio for the United States, as well as a lower ratio of population per allopathic physician, the ratio of population per osteopathic physician is much higher. Furthermore, the median age of osteopathic physicians now in practice in New England is over 60 years. This fact may have serious implications for those less populated areas in which osteopathic physicians have traditionally tended to practice as family physicians.

A8 - The median age of the podiatrists in practice in 1974 in New England was 54 years, and many of them will have withdrawn from practice within 15 years. Almost 90 percent of the podiatrists in New England are in solo practice, and 84 percent are located in Connecticut or Massachusetts. Twenty-nine of the 45 counties in Maine, New Hampshire, Rhode Island, and Vermont have been designated by the U.S. Department of Health, Education, and Welfare as deficient in podiatric medical services.

A9 - Although there have not been schools of osteopathy and podiatry in existence in New England for many years, they did provide a source of practitioners for this region which, subsequent to their closing, has not been adequately met by the schools that have been and are in operation in other locations in the United States.

B - ENROLLMENT

B1 - Sixty-five percent of the New England residents studying optometry in 1973-74 were enrolled at the Massachusetts College of Optometry.

B2 - Since 1969, the enrollment at the Massachusetts College of Optometry has been expanded, partially to meet the requirements for federal funding and partially in response to the increased number of applicants. As a result, its facilities are overextended.

B3 - Graduates of professional schools in optometry, osteopathy and podiatry tend to practice in the general regions in which they have studied. Of the active optometrists in New England in 1973, nearly 64 percent had studied at the Massachusetts College of Optometry, and over 63 percent of the active MCO graduates were in practice in New England, while over 16 percent were practicing in New Jersey, New York or Pennsylvania.

B4 - To help meet the potential needs in New England for health professionals delivering eye care, the Massachusetts College of Optometry is now giving preference in admission to students who are residents of one of the six New England states.

B5 - In recent years, the numbers of students throughout the country seeking admission to one of the health professional colleges, including especially optometric, osteopathic and podiatric colleges, have been increasing appreciably. In turn, the schools have been giving marked preference in admissions to residents of the states with which the schools have developed a contract arrangement. Under the contract arrangement, the schools give priority to or reserve places for qualified students from the

states which have contracted to provide financial support to the professional school. As a result, New England residents seeking admission are finding it increasingly difficult to gain entrance to schools of optometry, osteopathy and podiatry located in other sections of the country.

B6 - The primary source of future optometrists in New England is dependent upon the continued operation of a college of optometry in this region. Since there is no college of osteopathy or of podiatry, nor has there been for some years in New England, the manpower situation in these two professions has become precarious, especially for some sections of the region.

C - EDUCATIONAL FINANCES

C1 - In order to strengthen its academic program, to expand its total enrollment and educational offerings, to improve its physical facilities, and to meet the requirements of the federal government for funding, over a period of six years the Massachusetts College of Optometry increased its annual expenditures more than sevenfold. The college met its costs during this period by means of current yearly income, use of accumulated surplus from previous years, and gifts and grants, with special reliance on federal distress grants which have, with other federal funding, totaled more than \$2.75 million since 1969.

C2 - Since 1972, federal funding for the Massachusetts College of Optometry has been receding, and as of July 1, 1975 there are indications that this important source of income for the college is being reduced sharply, if not terminated. This development forces an evaluation of the future of optometric education in New England, which is the major focus of this project.

C3 - An analysis of the independent colleges of optometry in comparison with those that are affiliated with state-supported universities throughout the country indicates that those which are independent tend to have less income per student, to expend less per student, and to have larger enrollments. All the independent colleges are facing severe financial strains and are making efforts in different ways to broaden their base of support through association in one manner or another with publicly financed educational institutions.

C4 - The 1972-1973 study of educational costs for the health professions conducted by the Institute of Medicine in accordance with a Congressional mandate reported that the costs to educate an optometrist were one-third the yearly costs of educating a student in a school of allopathic medicine. The ratio is two-thirds for an osteopathic physician and less than one-half for a podiatric physician in comparison with an allopathic physician. Furthermore, the start-up and construction costs for the recently established schools of osteopathic medicine in Oklahoma and West Virginia are a small fraction of the costs for the allopathic medical schools and hospitals built by the University of Connecticut in Farmington and the University of Massachusetts in Worcester.

D - PROFESSIONAL PRACTICE

D1 - Because of some overlapping of areas of professional practice, there have been resultant conflicts between the profession of allopathic medicine (M.D.'s) and each of the three professions - optometry, osteopathy and podiatry.

The primary area of practice for the optometrist is diagnosis and treatment of the visual system excluding those conditions that require chemotherapy or surgical treatment. The ophthalmologist, the medical specialist in eye care, is trained in treatment of disease and surgery of the eye but devotes on the average a large proportion of his or her time to performing those functions for which the optometrist is trained.

As with doctors of medicine, doctors of osteopathy are granted an unlimited license to practice. Their basic professional education is similar. However, there are certain differences, many of which relate to the philosophy of osteopathy. The osteopathic physician places emphasis on the relationship between the musculoskeletal structure and organ function of the body. As a result of this approach and other factors, osteopathic physicians have tended to provide primary health care through family practice and to specialize only to a limited degree. Their practices have been located in smaller communities and rural areas to a much greater extent than those of doctors of medicine, and they have consistently insisted that the continued presence of osteopathic medicine has provided society with a choice of type of medical care.

The doctor of podiatric medicine receives a license to practice medicine, restricted to the area of the foot, or the foot and leg. Some podiatrists, who have had residency training, are specializing in reconstructive surgery of the foot, or of the foot and leg. In contrast, the medical physician who chooses to specialize and limits his practice to the bones, joints and muscular movements of the body is an orthopedic surgeon whose license is unlimited and whose practice is not restricted to the foot.

D2 - Despite the areas of overlap in practice between the three professions of optometry, osteopathy and podiatry with allopathic medicine, there is every indication that the services of each of these professions will continue to be needed to provide adequate health care to the growing population of New England. This fact is especially apparent in view of the heavy dependence for general medical care that this region has placed on the foreign medical graduate (FMG) who has obtained his medical education outside of the United States. Between 1963 and 1973, FMGs increased nationally by 130.7 percent, while in 1970, the FMGs comprised 33.8 percent of the practicing physicians in Rhode Island, 24 percent in Connecticut, and 23.9 percent in Maine. The FMGs comprised 21.3 percent of all doctors of medicine in practice in the six New England states in 1970. A sudden change in economic conditions or a revision in national policy could reduce appreciably this source of medical practitioners on which our health care system has grown so independent.

E - INTER-PROFESSIONAL EDUCATIONAL COOPERATION

E1 - Historically the medical profession has seldom encouraged the inclusion of educational programs for optometry, osteopathy or podiatry at the university or academic health center. Stated opposition to such inclusion has usually been based on doubt by the doctors of medicine as to the quality of education and practice of these other professions, and on expressed concern for the delivery of good health care to the public. At the same time, the medical profession has done little in the past to assist in the improvement of these educational programs, nor has it apparently ever encouraged the inclusion of optometric education in an academic health center. In addition to publicly expressed doubts of educational quality, other factors are involved but seldom stated.

These three professions are independent of allopathic medicine, and their educational programs have not been under the supervision of the medical profession. When included in universities or academic health centers, schools of optometry, osteopathy or podiatry have the same status in the university administrative structure as the school of medicine. This fact is disturbing, for example, to the ophthalmologists since ophthalmology is taught through a department in the school of medicine. Furthermore, education of more optometrists, podiatrists and osteopathic physicians increases the potential economic competition.

E2 - The members of the professions of optometry, osteopathy and podiatry independently of each other have exerted political pressure on legislators in several states so that by legislation in such states as Alabama, Michigan and New York, schools in these professional fields have been mandated as parts of state universities. The members of these professions have proceeded in this manner on the conviction that inclusion of their schools in universities and academic health centers would be beneficial to their respective professions and would also improve the delivery of health care to the public. In this approach they have gained and are continuing to gain the support of numerous medical educators, not the least of whom is Lowell T. Coggeshall, M.D., who identified many of the advantages of an academic health center in his report to the Association of American Medical Colleges in 1965, entitled *Planning for Medical Progress through Education*. He stated:

The scope of the educational program can be better for each discipline, because of the ready availability of qualified teachers on a wide variety of health topics.

The scope and quality of research is enhanced by the presence of this assembly of faculty.

The scope and quality of patient care are benefited, and a referral center for patients for diagnostic and treatment problems results.

Students in the several health disciplines can learn to understand and respect the contributions which other health professions can give, and the health team which is so important at the community level can be started in the educational setting.

There are economies in the use of common facilities and services - for example, the library, extension department, and computer center.

In some ways, the various disciplines stimulate each other to higher accomplishments.

Demonstrations of excellence or "models" can be provided to lead others to improve ways in which medicine is practiced and comprehensive health care provided.

BASIC ASSUMPTIONS AND CONCLUSIONS FOR PROVISION OF OPTOMETRIC, OSTEOPATHIC AND PODIATRIC EDUCATION IN NEW ENGLAND

The research and study conducted in this Health Sciences Research Project have led to the accumulation and presentation of much information regarding the professions of optometry, osteopathy and podiatry in New England. From analysis of this information, various assumptions and conclusions have been reached. The conclusions which follow, have, in turn, formed the basis for the recommendations in Chapter X with which the report of this project is concluded.

1 - DELIVERY OF HEALTH CARE

1A - The primary concern of the public is for adequate access to and receipt of good health care. Further, under developing economic, political and social conditions, should the public become convinced that it does not have adequate access to good health care, it will in time adopt measures to insist upon the attainment of this goal.

1B - It is not within the province of this project to define proper access to or the delivery of good health care. However, it is assumed that there will be changes in the customary modes of the delivery of health care and that multiple modes may be developed and adopted. New modes will generally place greater reliance on cooperation among the professions and the health care team approach, with public insistence on full utilization of trained personnel in all of the accepted and recognized professions.

1C - The professions of optometry, osteopathy and podiatry, as well as the profession of medicine with its specialties of ophthalmology and orthopedic surgery, are legally licensed and recognized professions in every state, and each contributes to the welfare of society by performing its services in its identified manner of practice.

1D - The delivery of health care is being affected not only by economic, political and social changes, but also by scientific discoveries, and technological developments, all of which affect the professions as they, in turn, change to adapt to these dynamic forces.

2 - INTER-PROFESSIONAL COOPERATION

2A - Just as it is not within the scope of this project to define the delivery of good health care, it is not the responsibility of the project to define the appropriate areas of practice for the professions of optometry, osteopathic medicine, podiatric medicine, or allopathic medicine. However, if the professions do not find it possible cooperatively to define their respective areas of responsibility in the delivery of good health care, the public will insist upon the areas being defined for them.

2B - The best time and place to initiate understanding and recognition of the contributions that each profession can make to the delivery of good health care, and also to stimulate cooperation among the professions, is when students are enrolled in their professional educational programs.

2C - As indicated in 1D, all the health professions are now in a process of almost constant change. For example, the profession of optometry continues to exercise its main responsibility of refraction and prescription of proper lenses for patients. However, as noted in *A Proposed Regional Plan for the Expansion of Optometric Education in the South* (Southern Regional Education Board, December 1974), in recent years "the optometrist's scope of practice has expanded to more sophisticated recognition of eye disease and ocular manifestation of systemic diseases, the diagnosis and treatment through lenses or vision training of defects of binocular vision, contact lens fitting, low-vision therapy, vision rehabilitation and development of vision performance."

Concurrently, the medical specialty of ophthalmology is also encountering dynamic changes, which, in some cases, conflict with the aspirations of the optometric profession to provide good health care on an expanded basis.

Similarly there are some areas of differences between osteopathic medicine and allopathic medicine, and between podiatric medicine and orthopedic surgery.

Beginning with the education of the potential practitioners, every appropriate effort should be made to resolve the conflicts between professions, to narrow their differences, to encourage cooperative delivery of good health care, and to involve informed non-health professionals in the process of jurisdictional decision-making when their presence would be helpful.

3 - MANPOWER

3A - Just as this project has not attempted to define the proper areas of professional responsibility for optometrists, osteopathic physicians, or podiatric physicians, it has also not endeavored to indicate the required or optimum manpower to meet the needs of the population of New England for the health care services provided by these professions. On the other hand, it is apparent that without an increase in the number of younger men and women entering the practice of these professions in New England, the ratio of practitioners to population will be reduced within a few years as the older practitioners retire or die and as the population continues to increase. The delivery of health care will correspondingly suffer, even as changes and improvements occur in the delivery of health care, such as increased cooperation among the professions.

3B - The continued input of optometrists into the health manpower pool in New England is dependent upon the maintenance of a college of optometry in the region.

3C - The continued input of osteopathic physicians and of podiatric physicians into the health manpower pool in New England is dependent upon the establishment in this region of educational programs in these professional fields. This need is accentuated by the admissions limitations enforced by osteopathic and podiatric colleges in other parts of the country, in a manner similar to the limitations imposed by the colleges of optometry.

4 - REGIONALIZATION OF EDUCATIONAL PROGRAMS

4A - In a statement made by Robert W. Eisenmenger, Chairman of the New England Board of Higher Education, the importance of regionalism in higher education was stressed. He made the following comments:

I would like to make one more appeal for regionalism. The cooperative programs of the New England Board of Higher Education enable schools with competencies in special programs such as pharmacology, law, medicine, physical therapy, pulp and paper technology and food technology to offer these to students throughout the New England region. Although everyone agrees in principle that each of the New England states should not have all of these high-cost specialties, in actual fact it is difficult to stop the proliferation of specialized programs.

The director of this Health Sciences Research Project concurs with Dr. Eisenmenger's comments but anticipates that, in view of the present economic restraints, the financial advantages of regionalization of programs of study for the professions of optometry, osteopathy and podiatry will be more readily appreciated and supported than past experience might suggest. Furthermore, no region of the United States is more appropriate for such educational regionalism than New England.

4B - For the professions that do not require a large annual addition to the manpower pool of practitioners, a regional educational program has several advantages. These include -

- (1) the sharing of expenses with a corresponding reduction in costs to each state;
- (2) the provision of opportunity for students from each of the states within the region to pursue professional fields of study from which they might be debarred by their inability to gain entrance to colleges in other parts of the country;
- (3) the availability of educational leadership and educational support for members of the profession in all the states and areas of the region; and
- (4) attention to the needs for health care in both metropolitan and rural areas of the entire region through clinical experiences for students in both types of areas.

5 - ACADEMIC HEALTH CENTER

5A - Educational programs for the professions of optometry, osteopathy and podiatry, or any combination of these three, could be developed within an academic health center, and by such inclusion and educational cooperation, the students, the professions, and society would gain.

5B - Since the establishment of a regional college of veterinary medicine in New England has been recommended in a separate study, such a college could be included beneficially in an academic health center with optometry, osteopathy and podiatry. However, veterinary medicine with either optometry or podiatry alone would not provide sufficient breadth of academic offerings to be significantly advantageous for any of them.

5C - The extent and exact type of inter-professional cooperation in an academic health center will depend on a number of factors: location, traditions of the university with which the center might be associated, trustee and administrative support, amount of financial assistance, extent and type of physical facilities, reception by the members of the faculties of the university, their support and commitment to inter-disciplinary education, and the support accorded by the members of the respective professions.

5D - The advantages of inclusion of optometry, osteopathy and podiatry in an academic health center are numerous and varied. The advantages include the following.

- (1) Costs can be reduced because of such factors as shared use of facilities, and central administrative and supportive services.
- (2) In serving more than one professional educational program the basic sciences can be developed more extensively than if they were serving a single professional educational program.
- (3) Research can be developed on an inter-disciplinary and inter-professional basis.
- (4) Inter-professional cooperation and collaboration can be initiated among the students in different professional fields by their joint enrollment in some courses and by their participation jointly in some clinical training.
- (5) Services to the public can be provided that would be more costly, or even impossible, if a single college endeavored to provide them.

6 - MASSACHUSETTS COLLEGE OF OPTOMETRY

Since the primary focus of the Health Sciences Research Project is the Massachusetts College of Optometry, several factors of basic importance concerning that institution have been established and serve as principles for the recommendations that are contained in the concluding chapter of this report.

6A - The financial conditions of the Massachusetts College of Optometry are precarious and require immediate attention. The college is a regional asset and serves as the major source of optometrists for this six-state region; its funding should be broadened to take these facts into account. It should be converted to a regional college with multi-state support.

6B - Although the financing of the Massachusetts College of Optometry is the most pressing issue for the institution, in the longer term the continued strengthening of the educational offerings is equally important. No independent professional college, such as MCO, can offer as broad or sound an educational program under contemporary conditions as one that is integrated on a cooperative basis with an academic health center. For example, no longer is optometric education primarily oriented toward physics as was originally the situation; it has undergone a basic transition so that its curriculum now places emphasis on the biological and behavioral sciences and, therefore, should be offered in close association with the basic sciences and other educational programs for the professions providing primary health care. There should also be ready access to such academic disciplines as endocrinology, neurology and pharmacology.

6C - Even though the physical facilities of the Massachusetts College of Optometry have been improved during the past few years, the conditions under which students are being educated and trained at MCO are inadequate and detract appreciably from its capability to offer the best education to future health care professionals who will be serving the residents of New England.

6D - Ideally, optometric education should be offered in close collaboration with ophthalmology, preferably in an academic health center that includes a school of allopathic or osteopathic medicine. This principle is well expressed by the editorial in the *Massachusetts Physician* (March 1971) quoted earlier in this report.

The optometrist is a highly trained specialist in correcting visual defects by prescription and fitting of glasses. If these services can be combined with, rather than compete with, those of the ophthalmologist, both professions and particularly the patient would benefit. If the two professional groups are to be brought together, this cooperation must begin during the educational and training period. Incorporation of schools of optometry not only into universities but into their medical centers should be a first step. If both education and training were integrated on the medical center campus, the distrust of each other's capabilities would break down and possibly a working relationship between the two professions would develop that would best serve the patient's interests.

ALTERNATIVES FOR PROVISION OF OPTOMETRIC, OSTEOPATHIC AND PODIATRIC EDUCATION IN NEW ENGLAND

Before reaching conclusions and making recommendations as to the best means by which optometric education, osteopathic education and podiatric education may be offered in New England, it is helpful first to review various

examples of alternatives by which such education might be offered. The alternatives are not exactly the same for each of these professional fields. Accordingly, they will be presented separately.

I - ALTERNATIVES FOR OPTOMETRIC EDUCATION

IA - Provide No Optometric Education in New England

This alternative would involve closing the Massachusetts College of Optometry and expecting that students from New England who wished to study optometry would gain entrance to colleges in other sections of the country. As previously indicated, such admission is difficult for New England students to obtain, and thus the supply of optometrists for this region would decrease and the delivery of eye care for the residents of New England would be adversely affected. Demand on the time of ophthalmologists, who are concentrated in the metropolitan regions, would be increased, and patients from outlying areas in the region would be forced to travel longer distances and encounter even longer waiting times for appointments. There would also be a correspondingly increased demand for more ophthalmologists, for whom costs of education and time required for education and training are greater than for optometrists.

In time such a development would likely lead to changes in the modes of delivering eye care. For example, a large number of ophthalmological assistants and technicians might serve under the supervision of ophthalmologists. The adequate preparation of such assistants and technicians to serve in clinics that might be created throughout the region would require the establishment of new educational programs. In one respect, these new educational programs would merely be replacing the present college of optometry, but they would not provide the benefits resulting from the specialized education and training now offered by MCO.

IB - Maintain an Independent College of Optometry in New England

In essence this alternative would perpetuate the present educational arrangement by which optometry is offered in an independent, single purpose college. The current disadvantages of academic and professional isolation and of financial weakness found in an independent college of optometry might be partially mitigated in several ways.

Despite past attempts, greater efforts at educational cooperation could be made and formal and informal arrangements developed by the Massachusetts College of Optometry with universities and other educational institutions in the Boston region such as the Massachusetts General Hospital. The name of the institution might be changed to the New England College of Optometry with some of the members of its board of trustees appointed by the governors of the six states and annual appropriations for operating expenses sought from the state legislatures.

An alternative to this type of financing might be provided through contracts with states, both in and outside of New England, for state support to the college based on the number of student places reserved for qualified students from the states under contract. This approach has already been pursued by MCO and consummated with the state of Connecticut.

Although these approaches would lead presumably to some improvements, they do not provide adequately for the desired level of academic, professional, administrative, and fiscal support required for a strengthened program of education for optometrists in New England who should be prepared in the future to take their place as members of the professional health care team.

IC - Affiliate the College of Optometry with a University That Has No Health Related Education Programs

Affiliation of the Massachusetts College of Optometry with a public or a private university that offers no health related education programs or studies in the health related sciences would provide some benefits, although limited ones, over the present situation. Presumably, administrative support in such areas as finance, maintenance, purchasing, and fund raising would be extended to the college of optometry by the university. In addition, there could be some educational benefits by encouraging association among members of the faculty of the college of optometry and the members of the faculties of the other schools in the university.

On the other hand, the presumed benefits of such an affiliation are limited since the professional and academic interests of the faculty members would coincide in an incidental manner only. Interests of faculties in liberal arts, business, education, engineering, fine arts, journalism, law, and other fields frequently taught in universities do not closely relate to the interests of those who are teaching in the health professional fields and the health related basic sciences.

The benefits that would accrue to optometric education if MCO were affiliated with a university with no other health education programs would be marginal and relatively insignificant. For optometric education in New England to be strengthened in a manner that would fulfill the goals established by the Health Sciences Research Project, an alternative for the Massachusetts College of Optometry should offer more benefits.

ID - Incorporate the College of Optometry in a University as Part of an Academic Health Center

In comparison with the previously mentioned alternatives, incorporation of the Massachusetts College of Optometry into an academic health center presents obvious advantages. These may be identified as academic, administrative, clinical, research, and financial.

Academic Advantages - An academic health center, which is associated with or part of a university, will include a number of health educational programs preparing students for different but related professions. If the educational programs are properly organized in accordance with present recognition of the need for inter-professional cooperation, students in the different professional programs will be encouraged and given opportunities to learn from each other and to recognize the contributions that the different professions make to the delivery of good health care. Members of the different faculties will be able to interact with each other. Furthermore, and of considerable importance, both faculty and students in optometry, for example, would have more ready access to such fields as anatomy, bacteriology, chemistry, microbiology, pharmacology, physics, physiology, and psychology, fields of study that are often not taught in sufficient depth in independent colleges of optometry.

Administrative Advantages - Incorporation of MCO into an academic health center would provide administrative benefits similar to those identified in the previously mentioned alternative (IC). In addition, these benefits would be enhanced since the general administrative staff would be more aware of the singular issues that relate to education for the health professions, than would the administration of a university in which optometry might be the only health education program.

Clinical Advantages - The advantages of the incorporation of a school of optometry into an academic health center are especially pronounced for the clinical education. In such an academic setting, joint clinical experiences would be provided and thus, students could become better acquainted with other health professions and learn to cooperate mutually in the delivery of good health care. A wider diversity of patients could be seen and treated in such settings, and the costs of operating separately administered smaller clinics for specialized purposes may be partially avoided.

Research Advantages - In a well oriented and operated academic health center, joint research between and among professions would be conducted. Although very specialized research is needed to find the answers to many biological issues related to human health, there is also considerable need for inter-professional research to improve the delivery of good health care, including preventive health care. Academic health centers provide a basis for such research that is not possible for an independent college in the health professions.

Financial Advantages - The financial benefits that accrue from the incorporation of an independent professional college into an academic health center are varied. Reductions in costs may be anticipated because of the elimination of the need for multiple administrative officers for each college or professional program. Certain duplicate facilities, such as libraries, are not needed. Some efficiency in operation may also result in certain financial savings, and fund raising may be facilitated by coordinating promotional programs.

At the same time, the budget for faculty salaries may well be increased by the incorporation of an independent college of optometry into an academic health center. Generally the salaries paid to members of faculties in independent colleges are less than those paid to members of faculties in academic health centers and universities. When the former are incorporated into the latter, the salaries of their personnel are usually increased to correspond with the general salary schedules of the academic health center. Although total salary costs may be increased as a result of incorporation of an independent college into an academic health center, the increase in salaries does serve as an inducement for some members of the professions, who might not otherwise be so attracted, to assume academic responsibilities. In this manner the potential pool of competent clinical professors is increased to the benefit of education and eventually to the benefit of the future delivery of good health care.

The advantages of the incorporation of the Massachusetts College of Optometry into an academic health center far outweigh any disadvantages that may exist, or the advantages of any other alternative.

II - ALTERNATIVES FOR OSTEOPATHIC EDUCATION

IIA - Provide No Osteopathic Education in New England

This situation exists at the present time. As a result, the number of osteopathic practitioners is dwindling since the younger men and women, who are obtaining their professional education in colleges located in other sections of the nation, are not entering practice in New England in sufficient numbers to replace those who are withdrawing from practice for reasons of retirement or death. This situation is serious not only for the profession of osteopathy but for the citizens of this region who prefer medical treatment by a member of the osteopathic profession, and/or who reside in those areas where doctors of allopathic medicine do not tend to practice. As has been noted, osteopathic physicians have generally been more interested in family practice in less populated areas than have doctors of allopathic medicine.

Unless osteopathic medicine is to be allowed eventually to disappear in New England, an osteopathic college should be established in this region.

IIB - Establish an Independent College of Osteopathic Medicine

For the same reasons that an independent college of optometry is relatively unsatisfactory for the education of optometrists, the establishment of an independent college of osteopathic medicine does not appear to be a viable alternative. In addition, public funding would be most difficult to obtain for such an enterprise in New England. The policies for federal support in the establishment of new, independent, single health related colleges have been continually changing and seem much less promising than in the past.

IIC - Establish a College of Osteopathic Medicine in Affiliation with an Institution That Offers a Baccalaureate Degree

The reason for considering this alternative relates to the fact that most of the major or larger universities in New England already support schools of allopathic medicine and would not be likely, as did Michigan State University, also to incorporate a school of osteopathic medicine in their structure. On the other hand, there are independent liberal arts colleges to whom the affiliation of an osteopathic medical school might have much appeal.

The disadvantages of affiliating a college of optometry with a university that has no health related education programs (IC) apply in a similar manner to the establishment of an osteopathic college in affiliation with an institution that offers only a baccalaureate degree. In addition, there are other disadvantages. An institution that offers only a baccalaureate degree would have no faculty members who are offering graduate studies in the basic sciences that are so important to the education of a physician, as well as to the education of individuals for the other primary health professions.

Establishment of a college of osteopathic medicine in affiliation with an educational institution must be based on more than convenience or availability. Consideration should include quality of supporting faculty in both clinical and basic science studies, availability of teaching hospitals and other clinical facilities, and opportunity for inter-professional relationships with

faculty and students in the other health professions. Affiliation with a liberal arts college would not seem to fulfill these requisites, even though it might provide some administrative and financial benefits and availability of physical facilities.

IID - Establish a College of Osteopathic Medicine as Part of An Academic Health Center

The importance of incorporating a college of osteopathic medicine in an academic health center includes the same academic, administrative, clinical, research and financial advantages as mentioned under optometric education in ID. In the case of osteopathy, however, there could be an added impetus since, until very recently, colleges of osteopathic medicine were operated quite independently of the educational programs for any of the other health professions.

Osteopathic physicians, who have tended in most cases to serve as family physicians, have much in common with such other primary practitioners as optometrists and podiatrists. The education for these three professions would be strengthened if planned and operated on a cooperative basis. The profession of osteopathy has much to offer to the professions of optometry and podiatry. In a similar manner, these latter two professions have much they could offer to assist in the development of osteopathic medicine. The delivery of health care could, in turn, be enhanced by such an educational approach in which the three professions initially cooperated in the development of an academic health center oriented towards the provision of health care to the citizens of New England.

III - ALTERNATIVES FOR PODIATRIC EDUCATION

IIIA - Provide No Podiatric Education in New England

A situation generally similar to the future of the practice of osteopathic medicine in New England, as mentioned in IIA, prevails in the practice of podiatric medicine, although to a less pronounced extent. The number of practicing podiatrists in this region will undoubtedly decrease unless a college for their education is established.

IIIB - Establish an Independent College of Podiatric Medicine

The comments included under the alternatives IB and IIB, as they relate to optometric education and osteopathic education, apply to podiatric education without need for further comment.

IIIC - Establish a College of Podiatric Medicine in Affiliation with a University That Has No Health Related Programs

Advantages and disadvantages to this alternative are mentioned with respect to optometric education in IC. In the case of optometry, the disadvantages exceed the advantages. The same situation would prevail with regard to the possible establishment of a college of podiatric medicine within a university that offers no other health related programs.

IIID - Establish a Cooperative Program Between One or Two Universities in New England and a College of Podiatric Medicine Located Outside of This Region

This alternative can be considered because, at the present time, the New York College of Podiatric Medicine, located in the Harlem district of New York City, has insufficient basic science facilities to accommodate all of the students it would otherwise be able to admit. In the curriculum at this college, most of the basic science courses are offered during the first two years, and most of the clinical work, for which there are expandable facilities, is offered in the final two years. In most respects, the basic science courses of the podiatry curriculum are similar to those included in an allopathic or osteopathic medical curriculum.

As a consequence of this situation the college is prepared to enter into a cooperative arrangement with one or more universities in New England. Through such a proposed agreement, students in this region who are qualified and wish to study podiatry could be granted admission by each institution to pursue the first two years of the podiatric curriculum at a university in New England and the last two years at the professional college in New York.

Northeastern University in Boston has recently agreed to make some of its educational facilities available on stated dates for limited use by the New York College of Podiatric Medicine to assist it in providing continuing education courses to podiatric practitioners in this region. It should also be noted that the medical school of the University of Massachusetts at Worcester has facilities in the basic medical sciences that could accommodate a considerably larger number of students.

An arrangement of the type outlined in this alternative might provide a means, at least on a temporary basis, by which some podiatric education could be offered in New England at an early date and at limited expense.

IIIE - Establish A College of Podiatric Medicine as Part of an Academic Health Center

The advantages of the incorporation of optometric education and osteopathic education in academic health centers (ID and IID), which apply equally to podiatric education, need not be repeated.

On the other hand, what are the possible alternatives to including one or more of these three professions in an academic health center that serves the citizens of New England? That is the issue presented in the following and concluding section of this chapter.

ALTERNATIVE ACADEMIC HEALTH CENTERS IN NEW ENGLAND FOR OPTOMETRIC, OSTEOPATHIC AND PODIATRIC EDUCATION

With the establishment of medical schools in recent years by Brown University in Providence, Rhode Island, the University of Connecticut at Farmington, and the University of Massachusetts in Worcester, there are now nine schools of medicine in New England. For many years medical schools have been in existence at Dartmouth College in Hanover, New Hampshire, the University of Vermont in Burlington, and Yale University in New Haven, Connecticut, as well as at three universities in Boston, Massachusetts: Boston, Harvard and Tufts.

As may be noted from Table IX-1, dentistry is included at four of these universities, and of the nine institutions with medical schools, several also offer a few other health related educational programs. However, none supports an academic health center in which the health related educational programs offered are in one center on an integrated or cooperative basis.

For example, the University of Connecticut conducts its dental and medical education in its large, new facility in Farmington. At the same time, audiology, clinical psychology, nursing, pharmacy, and physical therapy are taught 37 miles away on the main campus located at Storrs. A similar situation exists at present with respect to the University of Massachusetts at its campuses in Amherst and Worcester.

Another factor of considerable importance with respect to the inclusion of optometry, osteopathy or podiatry into an academic health center is the historical reaction of the profession of medicine to such developments. Where such programs have been included in academic health centers (Alabama, Michigan, New York), the state legislatures have adopted measures to mandate such inclusion, and the universities have had central administrative officers who were supportive of the professions of optometry, osteopathy or podiatry. The discussions, which were conducted between Boston University and the Massachusetts College of Optometry, and which ended inconclusively as to affiliation, could not continue because of issues between the professions of ophthalmology and optometry that were irreconcilable at that time. There are no indications that these issues could more easily be resolved at the present time to make it possible in the foreseeable future to include optometric education in a New England university with a school of medicine.

In view of these factors and assuming that optometric education should be maintained and osteopathic and podiatric education should again be offered in New England, and assuming that the best manner and place in which such education should be offered is in an academic health center, this report concludes that the creation of a center will be required to provide such education. And further, since a single program of study in each of these three fields should be adequate to meet the present and potential manpower needs in New England, they should be offered in a center created, operated, and oriented in such manner that they will serve the needs of the entire region, and not just one or two states. In other words, the academic health center that includes the professional fields of optometry, osteopathy and podiatry should be a regional institution serving and supported by each of the six New England states.

How and where might such a center be developed with minimum financial cost to the citizens of New England and within a reasonable span of time? At present, there appear to be at least two promising alternatives that should be analyzed in detail immediately following the completion of this Health Sciences Research Project. Each of these provides for separate incorporation of an academic health center under the aegis of the six states in locations that would permit cooperation, both formal and informal, with a university. One alternative is at Grafton, within a few miles of the School of Medicine of the University of Massachusetts in Worcester. The other is in conjunction with Northeastern University in Boston which has rather extensive property adjacent to the city that could be developed for use by an academic health center.

TABLE IX-1
SCHOOLS OF MEDICINE AND HEALTH RELATED PROGRAMS AT NEW ENGLAND UNIVERSITIES

PROGRAMS	BOSTON UNIVERSITY Boston Massachusetts	BROWN UNIVERSITY Providence Rhode Island	DARTMOUTH UNIVERSITY Hanover New Hampshire	HARVARD UNIVERSITY Boston Massachusetts	TUFTS UNIVERSITY Boston Massachusetts	UNIVERSITY OF CONNECTICUT Farmington Health Center Connecticut	UNIVERSITY OF MASSACHUSETTS Massachusetts Worcester Amherst Medical campus	UNIVERSITY OF VERMONT Burlington Vermont	YALE UNIVERSITY New Haven Connecticut
	main campus								
Audiology						X		X	
Clinical	X					X		X	
Psychology									
Dental	X								
Assistant								X	
Dental									
Hygiene	X			X	X	X			
Dentistry								X	
Medical									
Technology									X
Medicine	X	X		X	X	X	X	X	X
Nursing	X						X		
Occupational	X				X				
Therapy							X		
Pharmacy									
Physical	X						X		
Therapy									X
Public				X			X		
Health									
Speech	X						X	X	
Pathology									

Grafton

By action of the General Court of the Commonwealth of Massachusetts in 1974, over a thousand acres of land with unoccupied buildings are being held as a possible site for establishment of the proposed regional college of veterinary medicine. There is more than ample land available for the expansion of its use to include educational programs in optometry, osteopathy and podiatry, as well as other health educational activities, should such additions be feasible and desirable.

Because of the proximity of Grafton to the School of Medicine of the University of Massachusetts, a New England academic health center on this site could develop both formal and informal cooperative arrangements with the School of Medicine to the benefit of all of the educational programs, students and faculty members. Such cooperation would also reduce duplication of facilities and services, and lessen the total costs to the citizens of New England.

Further educational cooperation in this geographical area is possible through the Worcester Consortium for Higher Education. This consortium is composed of 11 institutions of higher education, including the School of Medicine, as well as ten associate members which include the Worcester Foundation for Experimental Biology. The consortium sponsors a number of shared and cooperative activities, one of which is a health studies option for students in the various colleges who wish to pursue health related vocations.

Northeastern University

A second alternative is related to a university that offers the largest number of health related programs to the largest number of students enrolled in the health sciences of any institution in this region. Table IX-2 lists the health related programs that are offered by Northeastern University on its campus located in the center of Boston. In addition, it has two sizable tracts of land immediately adjacent to Boston; one consists of 290 acres in Burlington, and the other is over 200 acres in Ashland. The University is willing to explore the possibility of establishing on one of these locations a multi-state governed and financed regional academic health center that would be operated on a contractually agreed, cooperative basis with Northeastern. The potential for cooperation is extensive, and again at less cost than would be the case in the creation of an institution without the potential of intimate cooperation with an established university.

SIGNIFICANT FEATURES OF A POTENTIAL ACADEMIC HEALTH CENTER IN NEW ENGLAND FOR OPTOMETRIC, OSTEOPATHIC AND PODIATRIC EDUCATION

At a time of political uncertainty and economic stringency, even the mention of a new academic health center may be disquieting, if not distressing, but in uneasy times one must still plan for the future.

This project has demonstrated that without educational programs in optometry, osteopathy and podiatry in New England, there will be insufficient manpower in these professions in the future to serve the health care needs

TABLE IX-2
NORTHEASTERN UNIVERSITY - HEALTH EDUCATION PROGRAMS, 1974-75

COLLEGE OR SCHOOL	PROGRAM	ENROLLMENT	DEGREES GRANTED				
			Cert.	AS	BS	MS	Ph.D.
Arts and Sciences Boston Bouve College	Health Sciences	(60)				X	
	Health Education	(58)			X		
	Physical Education	(492)			X	X	
	Physical Therapy	(430)			X		
	Recreation Education	(402)			X	X	
Business Administration	Health Care Administration	*				X (MSA)	
Continuing Education	Dept. of Health Science Support Programs:						
	Radiology Technician	(122)	X				
	Medical Laboratory Ass't.	(69)	X				
	Dental Assistant	(120)	X				
	Combined Program (mentally retarded, emotionally disturbed)	(15)				X (M.Ed.)	
	Elementary Education (special education concentration)	(166)			X		
	Rehabilitation Administration	(51)			X (M.Ed.)		
	Special Education	(70)			X (M.Ed.)		
	Speech and Hearing Therapy	(197)			X		
	Speech Pathology and Audiology	(85)			X (M.Ed.)		
	Teaching the Mentally Retarded and Emotionally Disturbed	(55)			X (M.Ed.)		
	Civil Engineering	(193)			X		X
	Civil Engineering with Option in Environmental Eng.	(35)			X		
	Industrial Engineering (Health Systems Major)	(2)				X	
	Clinical Chemistry	(85)				X	
	Associate Degree Program (three years)	(263)			X		
	Baccalaureate Degree Program (five years)	(620)			X		
Interdisciplinary Nursing	Cytotechnology	**			X		
	Dental Hygiene	(206)			X		
	Hospital Pharmacy	(70)				X	
	Medical Laboratory Science	(112)				X	
	Medical Laboratory Science (Medical Technology)	(240)			X		
	Medical Laboratory Technology	**			X		
	Medical Record Administration	(55)			X		
	Medicinal Chemistry	(39)				X	X
	Pharmacology	(44)				X	
	Pharmacy	(596)			X		
	Physician Assistant	(46)	X				
	Respiratory Therapy	(171)			X		
	Health Science	(222)			X		
	Management in Health Agencies and Institutions	(40)			X		
University College	Medical Records Science	(65)	X		X		
	Nursing Home Administration	(30)	X				
	Respiratory Therapy	(37)			X		
	Therapeutic Recreation Services for Nursing Home Activity Directors	(85)	X	X			
	Affiliated Programs (courses offered in conjunction with Lincoln and University Colleges):						
	Chemical-Biological Technology	*			X	X	
	Medical Technology and Cytotechnology	(402)			X		
	Clinical Cytology	(44)	X				

* Enrollment figures not available.

** Enrollment included with University College Medical Technology Program (B.S.).

of the citizens of the region. This fact presents a singular opportunity for six states to establish an academic health center that will serve and meet the manpower needs of an entire region for these three professions. Such an opportunity would require that these professions, with the possible inclusion of veterinary medicine, plan and develop simultaneously on a coordinated basis integrated educational programs, both academic and clinical, that will prepare practitioners to deliver health care throughout the region. Educational planning on an inter-professional basis is difficult; it is almost impossible to pursue successfully after programs of study have been developed independently and are in operation. The opportunity for such planning on the part of a group of primary health professions exists in New England. The next and final chapter of this report offers specific recommendations for the implementation of such planning.

CHAPTER X

RECOMMENDATIONS

Readers of this report who previously had little knowledge of the development of the health professions or their relationships with each other may feel baffled by the amount of information that has been presented, especially in the first seven chapters, just as the student of mythology is confused when he or she first encounters the fables of the Greek and Roman gods and goddesses. In fact, the director of this Health Sciences Research Project has wondered on occasions whether he may not be lost in the maze designed by Daedalus to confine the Minotaur or be swimming in the river Meander that flows back into itself and reverses at various times.

He has resisted the assumption of likeness to Sisyphus, the King of Corinth, who was condemned for disrespect by Zeus to push a heavy rock up a steep hill for the rest of his life. In resisting this comparison the director recognizes, however, that the road ahead for the recommendations that complete this project is not on level terrain; it does have some steep grades that need to be ascended, and there is not one large, heavy rock, but many different sized rocks that must be propelled simultaneously if the summit is to be attained successfully. In contrast to the burden imposed on Sisyphus, implementation of the recommendations of the Health Sciences Research Project need not be an endless chore with no potential for achievement.

These rocks represent a number of disparate factors. First, there are the health professions - optometry, osteopathy and podiatry, plus allopathic medicine with its various specialties. Each of these professions and specialties has a national organization, state societies, and in some cases, a New England regional association. These professions do not have common policies, nor do state societies in one profession necessarily agree with all the policies of their national or regional organizations.

Second, for this project which is concerned with higher education for the health professions, there are innumerable colleges and universities in New England whose interests must be recognized. Each has a separate board of trustees struggling to find sufficient financing merely to maintain its offerings and services. At the present time, these institutions are not interested in the establishment of programs of study which may compete for the funds that they each desperately need.

Third, the governments of the six New England states are directly involved, since it is through them and as a result of their legislative and administrative actions that any regional health educational program could be launched and developed.

Fourth, there is the federal government whose largesse has made possible the post-World War II expansion of education for the health professions and has also helped to fashion social policy so that the concept of regionalism is beginning to be recognized as one answer to some problems that many of the individual states cannot resolve alone. This study maintains that each state cannot and should not be expected to provide educational programs for each of the many and growing number of health professions, and that the states should combine their resources for this purpose on a regional basis.

Fifth, there is the general public which must be informed and reminded that provision of good health care to a larger proportion of a growing population is initially dependent upon planning far in advance for the education of a number of different types of health professionals.

Sixth, there are the planning and coordinating agencies that have been created primarily to perceive future social needs and that are expected then to encourage and cajole the other elements, whose interests often differ and compete, to agree upon and support a common policy that is intended eventually to improve the health of citizens.

The leadership of the New England Board of Higher Education, as the legally established regional coordinating agency for higher education, is the first requisite for successful fulfillment of the recommendations presented in this concluding chapter.

Because of the many complicated issues involved, because of the need for understanding and support from many disparate elements, and because of the current financial constrictions encountered by government at all levels and the corresponding political stalemate in most states, the issue of time must be recognized as a determining factor. Despite the example of Noah and the ark whose ordeal lasted only 40 days, it will take many times 40 just to bring on board the various elements whose support is necessary for the creation and operation of a regional academic health center in New England. But once on board, their joint participation will set an example for similar developments in other regions of these United States.

As everything cannot be accomplished at one time, a series of separate steps will first be necessary. Recommendations for some of these initial steps are presented later in this chapter, with special attention being given to the conversion of the present Massachusetts College of Optometry (MCO) to a regional, multi-state supported program. The present serious financial condition of the college makes this conversion an issue that should be of immediate concern to the citizens of New England whose future health care will be adversely affected if optometric education is not available in this six-state region and if the primary source of optometric manpower is discontinued.

It seems appropriate to submit recommendations for the establishment of a regional academic health center, which is the ultimate goal of this Health Sciences Research Project before presenting recommendations for immediate action with respect to MCO, despite pressing need for attention to optometric education in New England, and before presenting recommendations with respect to osteopathic and podiatric education. By presenting the recommendations in the following order the more immediate, initial steps can be oriented in a consistent and logical sequence.

RECOMMENDATIONS FOR SUBSEQUENT ACTION

A - CREATION OF A REGIONAL ACADEMIC HEALTH CENTER IN NEW ENGLAND

Various facts that support the concept of a regional academic health center have been presented in the previous chapters of this report and reiterated in the summary contained in Chapter IX. These facts support several basic points.

1. Adequate provision should be made for education in New England of health professionals who will provide ambulatory and primary health care, the demands for which are anticipated to increase throughout the region in the coming years. Three professions that place emphasis on ambulatory and primary health care are optometry, osteopathy and podiatry.
2. It is necessary that a program of study in optometric education be continued and maintained in New England if professional optometric manpower is to be sustained to meet the eye care needs of the population of the region.
3. It is necessary that programs of study for osteopathic medicine and for podiatric medicine be reestablished in New England in order to assure maintenance of manpower in these professional fields to meet the health care needs of the population of the region.
4. Since, for the foreseeable future, a single program of study for each of these three professional fields should be sufficient to meet the needs of the New England region, such programs should be established on a regional basis to serve all areas of New England.
5. Programs of study for such professions as optometry, osteopathy and podiatry should be offered in New England in a regional academic health center, not only for educational and professional benefits but also for reasons of economic advantage to each of the six states.

The following recommendations are based on these facts.

Recommendation A 1

The New England Board of Higher Education should serve as the coordinating agency for a program planning project and sponsor the analysis necessary to implement the eventual creation of a regional academic health center in New England to include programs of study in such health professional fields as optometry, osteopathy and podiatry, in addition to others that might later be included.

Recommendation A 2

The New England Board of Higher Education should -

- (a) *seek the funding necessary for the program planning project and*
- (b) *encourage support and participation on the part of the appropriate health professional societies in the project.*

On the basis of information presented in this report there are two possible locations that seem especially promising for a regional academic health center. One is on property in Grafton, Massachusetts reserved

temporarily by act of the legislature of the Commonwealth of Massachusetts for a regional college of veterinary medicine. The other is on property owned by Northeastern University within the greater Boston area.

In many respects similar advantages exist for each of these two locations.

1. There is adequate and available land on which a regional academic health center could be situated.
2. It is anticipated that contractual arrangements for cooperation could be developed with neighboring universities. In the case of the Grafton site, cooperation could be developed with the School of Medicine of the University of Massachusetts in Worcester and with the Worcester Consortium of Higher Education. In the case of the property owned by Northeastern University, cooperation could be developed with Northeastern, an institution that offers the largest number of health education programs of any university in New England.
3. Provisions for adequate clinical programs could be developed within reasonable distance of either location.
4. In either case, a regional academic health center could be created without the difficulties and struggles that would be entailed in endeavoring to convince members of the medical profession that educational programs for any one or more of these three recognized professions should be offered by a university that already incorporates a college of allopathic medicine.

Recommendation A 3

In analyzing possible sites for the establishment of a regional academic health center in New England, the program planning project should give special attention to property in Grafton, Massachusetts, and to property owned by Northeastern University within the greater Boston area.

Before a regional academic health center is actually created, it will be necessary to develop more definitive information than was authorized in the contract for this Health Sciences Research Project. To undertake the necessary analyses, participation of a number of individuals who possess specialized competence will be required in the proposed program planning project.

The program planning project should be authorized to analyze and prepare specific recommendations with regard to the following issues for a regional academic health center. These are -

1. the basis of control or governance, including type of composition of the board of trustees and administrative structure;

2. the means and sources of financing for such an educational enterprise;
3. the development of detailed curricular plans on a cooperative, inter-disciplinary basis for such professions as optometry, osteopathy and podiatry, as well as veterinary medicine;
4. the development of detailed plans for clinical services to be provided by the proposed regional academic health center with attention to the needs for improved access to the delivery of health care for the population in both the metropolitan and rural areas of New England;
5. the development of architectural and engineering plans for the physical facilities required for a regional academic health center;
6. the designation of areas of potential cooperation between the regional academic health center and neighboring universities; and
7. the creation of a budget for start-up costs, construction costs, and annual operating costs for a regional academic health center for New England.

These topics are specifically enumerated in the following recommendation.

Recommendation A 4

The program planning project for a regional academic health center in New England should be expected to analyze and develop specific proposals with respect to the following topics:

- (a) *form of control and administration*
- (b) *sources of financing*
- (c) *inter-disciplinary curricula*
- (d) *clinical education and services*
- (e) *architectural and engineering plans*
- (f) *inter-institutional cooperation with neighboring universities*
- (g) *budgets for construction, start-up and annual operating expenses.*

RECOMMENDATIONS FOR IMMEDIATE ACTION

While the eventual creation of a regional academic health center is a long-term project, there are actions that can be taken more immediately with respect to optometric, osteopathic and podiatric education in New England. In fact, if action is not taken immediately with respect to optometry, the education that is now being offered in this professional field, primarily to residents of this region, may be severely impaired.

B - NEW ENGLAND COLLEGE OF OPTOMETRY

Since there is an independent college of optometry in New England, which has been in existence for many years, and since it is at present in an extremely precarious financial situation, the primary focus of this project has been on the conversion of this college to a regional, multi-state supported institution. The goal is based on the premise that a small independent professional college cannot be operated successfully under present conditions without an annual income from endowment or other assured sources to provide a major supplement to revenue from tuition.

The Massachusetts College of Optometry is a small, single-purpose, professional college which has been financially dependent for its continued operation in recent years on tuition revenues and grants from the federal government. Gifts from corporations, foundations and individuals have been very small, and financing from the New England states has been limited to the year 1974-75 when Connecticut signed a contract with the college and with NEBHE to provide funding in return for admission of a stated number of qualified students who are residents of that state. The legislature of Connecticut did not renew appropriations for this program for 1975-76.

In view of the imminent reduction of federal funding and the probability that gift monies will be insufficient to meet the total operating deficits, MCO must increase its tuition charges, endeavor to raise more funds in the form of gifts, and at the same time, concentrate its efforts on seeking yearly appropriations from all the New England states, each of which would benefit by cooperative regional support for optometric education. This effort will necessitate careful planning and the execution of a series of steps, over a period of several years, directed toward the incorporation of the college into a regional academic health center.

Recommendation B 1

The Board of Trustees of the Massachusetts College of Optometry should take immediate action that will -

- (a) raise tuition charges for all students;*
- (b) expand the college's program of solicitation of gifts from all sources;*
- (c) reduce expenditures wherever possible without impairment of its educational program;*
- (d) officially change the name of the institution to the New England College of Optometry;*
- (e) revise the college's charter and by-laws, as appropriate, to permit appointment of some members of the board of trustees by the governors or other designated officials of each state (see Appendix A for proposed revisions in charter and by-laws; and*
- (f) declare the desire and the intent of the college (i) to become a regional multi-state supported program of professional study, and (ii) to be integrated into a regional academic health center.*

Despite the fact that current fiscal conditions are not propitious for the states to expand their economic commitments to educational programs, the financial conditions of MCO permit no alternative to seeking such public support at this time. Either one of two methods of providing state funding of optometric education in New England should be encouraged. One method is through contracts between the college and the individual states, similar to the contract with the state of Connecticut, but on an expanded basis. This method guarantees a number of places in each entering class to qualified residents from each state under contract. The second method is direct appropriations on a yearly basis to the college once it has been converted to a publicly supported and regionally controlled institution. The latter method is more desirable on a long-term basis.

Under the second method, an equitable share of costs distributed among the states would be based on the total population of each state to the total population of the region. Table X-1 indicates what the costs to each of the six New England states would have been for the fiscal year ending June 30, 1975 were such a basis of financing in operation at that time with each of the six states participating. The amount of total state funding required is \$462,727 or \$1,635 per student, based on the total expense budget for MCO to educate 283 full-time students during the fiscal year 1974-1975 less income from tuition, operation of clinics, gifts, and research contracts excluding capital equipment. Income from federal distress grants and capitation grants that have been provided in recent years is not included.

TABLE X-1
COSTS TO THE NEW ENGLAND STATES FOR MCO OPERATING AS A
REGIONAL, PUBLICLY SUPPORTED COLLEGE OF OPTOMETRY 1974-1975

N.E. States	Estimated Population 1973	Percentage of Total N.E. Population	Amount of Funding for MCO Current Operations
Connecticut	3,080,000	25.36	\$117,348
Maine	1,039,000	8.55	39,563
Massachusetts	5,799,000	47.75	220,952
New Hampshire	794,000	6.54	30,252
Rhode Island	967,000	7.96	36,833
Vermont	466,000	3.84	17,769
Total	12,151,000	100.00	\$462,727

Source: *Current Population Reports*, Series P-25, No. 539, "Population Estimates and Projections: Estimates of the Population of States by Age: July 1, 1973 and 1974," U.S. Department of Commerce, Bureau of the Census (Washington: Government Printing Office, January 1975).

Recommendation B 2

The Massachusetts College of Optometry should intensify its efforts -

- (a) to devise and seek adoption of a system of financing by which each of the six New England states shares equitably in the annual operating costs of the institution;*
- (b) to develop, as an interim measure, contracts with the individual states by which each state provides annual funding in proportion to the number of places in each entering class guaranteed for qualified residents from the state; and*
- (c) to obtain federal funding to assist the college during the transition period from an independent institution to one that is multi-state supported and regionally controlled.*

Recommendation B 3

The New England Board of Higher Education should provide all appropriate assistance to the Massachusetts College of Optometry as it seeks federal and state financing and endeavors to be converted from an independent institution to one that is multi-state supported and regionally controlled.

Although the current financial conditions of MCO represent its most pressing issue and one that must be faced directly and resolved, the long-term issue is the incorporation of the institution into an academic health center. It has already been observed that when a program in optometric education is offered in conjunction with other professional fields there are innumerable benefits. The educational program is strengthened. Teachers in different disciplines have more ready access to each other. Research is stimulated and enriched. Students are exposed to wider learning opportunities when taught in some classes with students pursuing studies in related professional fields. Clinical experiences can have more meaning for students when they treat patients in multi-professional clinics, and the patients can also be given better treatment.

These and other benefits can result when optometry is taught in an academic health center. But, as previously indicated, the incorporation of MCO into a regional academic health center that does not yet exist will require considerable time in planning and implementation. Consequently, only the first steps toward such integration can be taken at this time, but they should be initiated now.

Because of the geographical propinquity of MCO and Northeastern University, and because of other factors previously mentioned, it will be beneficial if the two institutions negotiate and execute a contractual arrangement for close educational cooperation. This could be a major step leading to the incorporation of optometric education in New England into an academic health center. Cooperation between MCO and Northeastern University could include such activities as reciprocal use of libraries, clinics, laboratories, recreational and other student facilities, joint faculty appointments, offering common basic science courses, cross-enrollment of students, sharing computer time, joint faculty research, and jointly planned visiting lecture series.

Since cooperative possibilities between MCO and other neighboring universities have not been explored in the conduct of this project as extensively as they were with Northeastern University, MCO might wish to seek a basis of cooperation with more than one institution.

Recommendation B 4

The Board of Trustees of the Massachusetts College of Optometry should take action authorizing that steps be taken, as soon as possible, to negotiate and execute a contract between the college and Northeastern University, and other appropriate institutions, providing for as many areas of cooperation as possible between MCO and the other institution or institutions, and also providing that the contract or contracts be subject to review at the end of three years following execution.

C - NEW ENGLAND COLLEGE OF OSTEOPATHIC MEDICINE

The establishment of a college of osteopathic medicine in the state of Michigan a few years ago may have implications for the development of osteopathic education in New England. It is of interest to note that the incorporation of the college of osteopathic medicine at Michigan State University was the result of the conversion of an existing college. The Michigan legislature enacted legislation that provided for the transformation of a then recently established independent professional college into a university-related academic health center.

The New England Foundation for Osteopathic Medicine is at present taking steps to create a college of osteopathic medicine that would be affiliated with a university or a liberal arts college. It is possible that if an osteopathic college were already established and operating, the legislatures of the six New England states would become more aware of the need for osteopathic medical practitioners in this region and then become more sensitive and sympathetic to the financial measures that will be required to support osteopathic education in an academic health center.

Recommendation C 1

The New England Foundation for Osteopathic Medicine should -

- (a) continue with its efforts to establish a New England College of Osteopathic Medicine to begin operations at the earliest feasible date;*
- (b) declare at the present time its intention to cooperate in the planning for and establishment of a regional academic health center in New England; and*
- (c) seek eventually to incorporate the New England College of Osteopathic Medicine into a regional academic health center, if and when such a center is established in New England.*

D - NEW ENGLAND COLLEGE OF PODIATRIC MEDICINE

In contrast with optometry, which has a college in operation in New England, and osteopathy, which has a regional foundation endeavoring to establish a college, podiatry, at the present time, must rely on the several

state societies which include among their activities participation in a regional conference held only once each year. There is now no college of podiatry in New England, nor any coordinated, regional activity seeking to establish one.

In the adjacent states of New York and Pennsylvania, there are three colleges: one in Philadelphia, established in 1960; one at the State University of New York, Stony Brook, whose first class has yet to be matriculated; and the New York College of Podiatric Medicine in New York City, founded in 1911, which is the oldest college of podiatry now in operation in the United States. It is this last college that has the potential for comparatively easy expansion of its clinical educational offerings, which are given in the last two years of the four-year course. However, it has insufficient facilities for expansion of its enrollment in the first two years, which are devoted primarily to the basic sciences.

With encouragement from the American Podiatry Association, the New York College of Podiatric Medicine has recently made arrangements to extend its continuing education offerings to practicing podiatrists in New England and has contracted with Northeastern University for part-time use of some space in which to offer these programs. In addition to this development and as a means of establishing some undergraduate education in podiatric medicine in New England, the New York College of Podiatric Medicine is prepared to initiate discussions with one or more universities in this region for the development of a cooperative program by which qualified residents of the New England states, who wish to study podiatry, could be admitted to the cooperating university to study basic medical science courses for two years before completion of the final two years in New York, where there are almost unlimited clinical possibilities.

Recommendation D 1

The American Podiatry Association should assume leadership and seek the cooperation of each of the state podiatric societies in New England in creating a New England Foundation for Podiatric Medicine whose primary purpose would be the establishment and support of podiatric medical education in this six-state region.

Recommendation D 2

The New England Board of Higher Education should -

- (a) assume leadership in initiating discussions between the New York College of Podiatric Medicine and Northeastern University, the University of Massachusetts at Worcester, and other appropriate universities in New England, leading to a contractual, cooperative arrangement by which qualified residents of these six states could be admitted to a university in New England for the first part of their education in podiatry followed by enrollment for the final part at the New York College of Podiatric Medicine; and*

- (b) *invite representatives of the New England Foundation for Podiatric Medicine to participate in such discussions between the New York College of Podiatric Medicine and individual universities in New England.*

Recommendation D 3

The New England Board of Higher Education and the New England Foundation for Podiatric Medicine should each take steps, which are intended to lead to the offering of podiatric education in this six-state region, only in such manner as to facilitate the eventual inclusion of podiatric education in a regional academic health center, if and when such a center is established.

OTHER RECOMMENDATIONS

E - EDUCATION TO MEET HEALTH CARE MANPOWER NEEDS

For the eventual and successful implementation of a regional academic health center in New England, it is necessary that a number of disparate groups be fully informed on a regular basis of the purposes and need for such an enterprise. As stated in the earlier part of this chapter, these groups include the health professional societies, institutions of higher education, legislators and other officials of the six state governments, planning agencies, officials of the federal government, and the general public. Each of these groups should be informed on a regular basis of the desirable educational means by which the need for health manpower in New England can and should be met.

Recommendation E 1

The New England Board of Higher Education should assume leadership in the preparation and dissemination of information on a regular basis with regard to -

- (a) *educational provisions for meeting manpower needs in the health professions in New England; and*
- (b) *the benefits that could accrue to the residents of the six New England states by the establishment and operation of a regional academic health center.*

F - STIMULATION BY THE PROFESSIONS

The stimulus for continued provision of optometric education in New England should come from the members of the profession of optometry. In a similar manner, if there are to be colleges of osteopathy and of podiatry in New England, these two professions must provide the motivating force. Without active participation of the members of the professions in each of the six states there will likely be only rhetoric and little action.

Recommendation F 1

The Massachusetts College of Optometry should pursue every appropriate measure to encourage members of the profession of optometry in each of the New England states actively to encourage the states to finance the college and to encourage the conversion of the college to a regional, multi-state supported institution, eventually to be incorporated into a regional academic health center.

Recommendation F 2

The New England Foundation for Osteopathic Medicine should pursue every appropriate measure to encourage members of the profession of osteopathy in each of the New England states to support actively the creation of a New England College of Osteopathic Medicine, eventually to be incorporated into a regional academic health center.

Recommendation F 3

Until such time as a New England Foundation for Podiatric Medicine has been established, the American Podiatry Association, in cooperation with the podiatric societies in each of the New England states, should pursue every appropriate measure to encourage members of the profession of podiatry in these states to support actively the initiation of a program of education in podiatric medicine in this region and to support the eventual inclusion of such a program in a regional academic health center.

G-INTER-PROFESSIONAL STUDIES

The practice of any of the health professions is influenced in varying degrees by its relationships with other health professions. In the case of the delivery of eye care, the relationship between the profession of optometry and the medical specialty of ophthalmology has a direct bearing on the development of optometry as a profession, on the extent, type and cost of health care available to the public, and on the educational programs that prepare practitioners for the profession of optometry. Repeated attempts have been made by ophthalmologists and optometrists jointly to resolve many of their differences generally with limited success. These endeavors, which must be pursued and completed in a manner satisfactory to all parties, require the presence and involvement of a third party to have the slightest chance of success.

Recommendation G 1

The New England Board of Higher Education should -

- (a) establish an inter-professional committee to be concerned with eye care personnel;*
- (b) initially invite representatives of the optometric profession and representatives of the medical specialty of ophthalmology in equal numbers to serve on this inter-professional committee with an equal number of knowledgeable, non-health professionals;*

(c) *charge this inter-professional committee with the following responsibilities:*

- (1) *collecting and analyzing information about the types of personnel providing eye care and their distribution in each of the New England states, such eye care personnel including, but not limited to, ophthalmologists, optometrists, opticians, and eye care assistants and technicians;*
- (2) *recommending the content of a desirable academic and clinical, inter-disciplinary program in optometric education to be offered in a regional academic health center;*
- (3) *reviewing the licensure laws for the practice of optometry and other eye care health professions in each of the states of New England with the intention of making recommendations for their uniformity; and*

(d) *seek funding for support of the activities of this inter-professional committee from the appropriate agency of the federal government.*

CONCLUSION

As indicated several times in this report, the Health Sciences Research Project has focused its primary attention on the Massachusetts College of Optometry and the proposition that "it should be organized, administered, and supported as a public New England regional facility." This is not a new idea. In 1956 the Association of Schools and Colleges of Optometry adopted a resolution pledging "to cooperate and assist in studying, planning, and carrying out regional programs in optometric education," and urging "every agency concerned with regional programs in education to study the need for optometric education in its area."

Almost 20 years later, with funding from the federal government, such a study has been completed under the sponsorship of the New England Board of Higher Education. The conclusions of this project strongly support the concept of regionalization for optometric education in New England. The recommendations propose ways by which such regionalization can be developed not only for optometric education but also for osteopathic education and podiatric education. The next step is to implement the recommendations.

APPENDIX A

CHANGING THE LEGAL AND FINANCIAL STATUS OF THE MASSACHUSETTS COLLEGE OF OPTOMETRY

Converting the Massachusetts College of Optometry (MCO) from a private to a public institution supported and operated on a New England-wide basis seems most practicable if accomplished in several stages. The subject has not yet been explored with the governments of the six states. Consequently, it should be assumed that some time must elapse before the idea can win acceptance and be legislatively and administratively implemented. In the meantime, MCO must continue to operate substantially on the basis of its present authority. It should also be considered that there are possible gradations between completely private and completely public status and that an evolutionary process, even if it is one lasting only several years, may be more manageable than a sudden metamorphosis. Some institutions, once entirely private, now have a degree of public support and control. Specific arrangements vary and can be tailored to the circumstances of the particular case.

The inclusion of a regional college of optometry in a New England Health Center would be facilitated by making MCO into a regional institution. However, for the present, this may be regarded as a separate question whose outcome is dependent on future developments in other fields as well as on the support of optometric education by the states of the region. Accordingly, this appendix will deal only with the regionalization of MCO, and primarily with steps in that direction that could be taken fairly soon and with a minimum of new statutory or other machinery.

Initial Action by Massachusetts College of Optometry

There is little likelihood that MCO could or would be converted into a regional college of optometry with major or complete state support unless it desires such a change in status and itself moves to invite and encourage the change. From MCO's standpoint, the reasons for doing so are compelling. They have been described in the body of this report. From the point of view of the states, the advantages of a regional college of optometry are also substantial, but it cannot be said that they are yet well known to governors, legislators or the general public.

It follows that the first formal steps should be taken by the Massachusetts College of Optometry. The incorporation documents which MCO has filed with the Commonwealth of Massachusetts and its By-Laws presently provide the legal authority upon which the institution functions. These documents also fix the name and character by which MCO is known and the nature of the governing board which directs its affairs.

MCO could change its name to the New England College of Optometry. This change could be accomplished by amendment of the Certificate of Incorporation secured under date of 1946. The purpose would be to indicate more accurately the geographic area with which the College intends to be identified. It would also be a desirable move in terms of seeking support in states other than Massachusetts.

The next step could be for the renamed College to take official action making it a policy of the institution to seek and accept a role as a regional college of optometry and to invite financial and other arrangements in support of this objective. Accordingly, the present Board of Trustees of the renamed College could issue an official statement. Its exact content and phraseology should be for the Board itself to determine. However, in order to indicate in a concrete fashion what such a document would be like, a draft text is presented at the end of this appendix.

At the same time that the Board of Trustees adopts a policy statement such as here suggested, the members of the Corporation should amend the By-Laws. These already contain provisions authorizing a Board of Trustees to consist of not less than eleven nor more than twenty-one members, which can be further augmented by up to five persons - the President and four others chosen by the Board itself to serve with all powers of other Board members. (By-Laws, Art. III, Sec. 1) This suggests that additional trustees having some connection with state governments might even be named under the existing By-Laws provided that representatives from a maximum of four states were to be accommodated.¹ However, since the purpose is to begin a chain of events that would lead to the conversion of the present College into a regional institution, public in character, and supported entirely or substantially by the New England states, it would be better to make specific provision for state government representation rather than to rely on a less specific provision. The text of a by-laws provision that would accomplish the purpose is included at the end of this appendix.

The first stage of conversion of MCO into a public regional college of optometry could consist of the commitment of its enrollment capacity to students who would be regarded much as students in the state colleges and universities of the several New England States. They would pay tuition, but the nontuition portions of the costs of their education would be borne by the states. However, since the institution itself would not yet be owned and operated by a joint instrumentality of the state governments, the state subventions would come in the form of contract support payments. Some or all of the six states could participate. Part of the New England College of Optometry's capacity could be set aside for students coming under these contracts. The region already has, through the New England Board of Higher Education, a mechanism for the negotiation and making of such contracts. It was used during the academic year 1974-1975 by Connecticut to purchase some

¹Aside from the provision just summarized, neither the incorporating documents nor the By-Laws contain any express provisions setting forth the qualifications of trustees or placing limitations on the types of persons who may be elected. Accordingly, it could be that the members of the Corporation might elect state officials to the Board as vacancies occur or as terms expire.

spaces at MCO and should be used on a larger scale for the making of contracts with as many of the New England States as would wish to enter into arrangements.

In addition to the provision of financial support and favored student access to the institution, an important aspect of public status is governance. State institutions of higher learning are governed by boards selected by governors or otherwise prescribed by state law. Until the college of optometry is actually public, an arrangement part way between the normal public governance mechanisms and private ones should be devised. That is the reason for suggesting some state representation on the present Board of Trustees.

The arrangements just discussed could continue for a period of some years. However, they would provide something short of the stability desirable for a permanent public program of regional, publicly supported optometric education. Neither the College nor the states could know for certain whether their contract partners would continue for any great length of time. Consequently, the making of significant capital investments and the development of truly regional programs would be inhibited. Accordingly, the plan proposed here should be regarded as transitional.

Finance and Contracts

Restoring and maintaining the financial health of New England's only college of optometry is clearly essential for the institution. It is important for the region because of the education which it provides in a necessary profession used by all of New England to secure a basic ingredient of eye care.

Of course, the six states of the region could support a college of optometry if it became a public regional institution of higher learning. Until such a course is taken, states of the region can provide financial assistance through contract arrangements. Their reason for doing so would not be to improve the condition of a private institution. Rather, it would be to provide for a public health need which for the time being is best secured by purchase from an existing private institution. Contracts of this type would in effect provide for the purchase of optometric education by a state on behalf of its residents. The Compact establishing NEBHE expressly authorizes the negotiations of such contracts by NEBHE on behalf of its member states and they can be made with both public and private institutions. The relevant portion of Article V of the Compact reads:

The board shall have the power to: . . . (2) enter into such contractual agreements or arrangements with any of the compacting states or agencies thereof and with educational institutions and agencies as may be required in the judgment of the board to provide adequate services and facilities in educational fields covered by this compact . . .

The most direct arrangement, already amply represented in precedent, would be contracts under which MCO would undertake to reserve specific numbers of places for students from the state making the contract. In view

of the facts presented in this report, it seems likely that, were all six New England States to conclude such contracts, they could easily fill all of the current capacity of the College.

Such purchase of educational services from a private institution is clearly within the legal capability of the states, provided only that funds usable for the purpose are appropriated. In addition to the NEBHE practice and program already mentioned, several other precedents can be identified.

A number of the states have scholarship programs under which they assist their residents attending institutions of higher learning both within and without the state.² Such scholarships can be used for attendance at private institutions.³ In this connection, it will be recalled that during the academic year 1974-1975, Connecticut did pay for student places at MCO by contract rather than scholarships.⁴

The question then arises as to the level of possible support which could be achieved in this way. If contract payments were only in amounts necessary to defray the tuition and related fee costs of students, the arrangement might be helpful, but only partially so. The College would be assured of full enrollment and would be safeguarded against possible loss from empty seats. However, as already indicated, this may not be the most serious problem. Moreover, even resident students at state universities virtually always pay tuition. Tuition and related fee income is almost never fixed to cover anything like the full cost of educating students. It would probably do no more than account for a portion of current operating costs.

However, there does not appear to be anything in the constitutions or laws of the New England States which would prevent their paying amounts on behalf of each student which took into account capital costs as well as operating costs. So long as the states paid reasonable sums for the services provided, they would be easily defensible.

Regarding the arrangements as purchases of services obviates the necessity to consider whether the money could be paid to private entities. Clearly, states can and daily do make purchases from private business entities. Nevertheless, it may be appropriate to point out that under the laws of each of the six states, higher education is recognized as a "public purpose".⁵ Consequently, public provision of it, even if at a private

²C.G.S.A. (Conn.) 10-116C (1975 Supp.); M.R.S.A. (Me.) 20-2205, 2207 (1974-1975 Supp.); M.G.L.A. (Mass.) C.21, sec. 38A, C. 69, sec. 7D (1973); RSA (N. Hamp.) 200-D:10 (1973 Supp.); Gen. Laws 1956 (R.I.) 16-37-20, 16-37-29 (1970).

³Id.

⁴C.G.S.A. 10-329i (1975 Supp.).

⁵Conn. Const., Art. VIII, Sec. 2; C.G.S.A. sec. 10-335 (1975 Supp.); Maine Const., Art. VIII, Sec. 1; M.G.L.A. C. 69 App. Sec. 2-7 (1973); N. Hamp. Const., Pt. 2, Art. 83; RSA 195-D:1 (1973 Supp.); Gen. Laws (R.I.) 45-38.1-1 (1970); 16 VSA sec. 2171 (1970).

institution, would not be appropriation of public funds in aid of a private purpose. Indeed, if NEBHE were to be the contracting agent, as the laws of all six states already authorize, no questions of this kind would have to be considered anew. NEBHE's student placement arrangements are already made with both public and private institutions. Furthermore, they generally are built on the principle of student responsibility for tuition. The state money goes for the "cost of education" including overhead not covered by tuition charges and other student fees. Accordingly, contracts of the NEBHE type would be of direct value in supporting MCO and would be addressed to aspects of educational costs which might be considered state responsibilities rather than to those which are most normally defrayed by the students themselves.

State Participation in Governance

If the states assume responsibility for supplying and contributing to the cost of educating a substantial portion or all of MCO's student body, it may be that they would want and should have some voice in the governance of the institution. Further, should the College of Optometry sooner or later become a public institution supported by some or all of the New England States, such representation would be a suitable transitional step from MCO's present status to the new one. Accordingly, it is appropriate to inquire whether the states could legally appoint trustees to MCO's governing board.

For a private corporation, the first determinant of who may serve on its governing board are its own Articles of Organization and By-Laws. If the former contains no obstacles, and either the former or the latter so authorize, state officials are eligible to serve.

The next question is whether anything in the laws of the state prevent or impede such service and whether any special authorizations are necessary. This is to be determined by examination of the laws of the particular jurisdiction or jurisdictions concerned.

There is little if any law directly on the point. Undoubtedly, the reason is that the situation is not a customary one. However, where it is desirable that an action be taken, the absence of precedent is not controlling, provided only that the arrangement is consonant with the general legal framework and is not contrary to public policy.

There would seem to be little reason why an official or employee of state government, acting in his individual capacity, could not serve as a member of the Board of Trustees of an educational institution such as MCO. So long as the particular board membership did not constitute a conflict of interest, or did not otherwise interfere with performance of official duties, the public official or employee would be free to undertake such activities and responsibilities as he might choose.

State officials can engage in private business activities if there are no statutory prohibitions and if there is no inconsistency or conflict

between the office held and the particular private activity.⁶ A test frequently employed by the courts is whether the private activity carries a salary or other compensation.⁷

The nature of the activity also makes a difference. For example, it has been held that a state legislator could also be a member of a Commission on Interstate Cooperation because the latter position was not properly to be viewed as "an office" even though it was a separately identifiable duty.⁸ Further, it was viewed as an extension of the legislator's functions rather than an activity in conflict with them. Similarly, the service of state officials on temporary or special bodies for specific purposes in which the state has an interest has been found permissible.⁹

In order to provide representation for the state government, it would seem likely that a somewhat stronger connection would be desired than that which would be achieved by the mere fact that a person in the state government might choose to be on a board of trustees, entirely as a matter of his own private activity. Selection for the assignment by the Governor or some other relevant state official would seem to be appropriate. If a state has a contract or other arrangement for student places with MCO and it is contemplated that the relationship is already of significant proportions or will turn into a permanent relationship, it would seem reasonable for a state government to respond favorably to an opportunity to place a member on the governing board of the institution. From the state's point of view, the arrangement could be justified as monitoring the services purchased and being rendered, a function often performed by state personnel in a variety of ways, which, in particular instances are adapted to the nature of the services and to the appropriateness of specific techniques to keep them under continuous evaluation. So long as service on the Board did not bind the official or his state to any commitment or action, there would seem to be nothing legally objectionable.

It should be noted that the state constitutions generally contain provisions prohibiting or otherwise restricting a state official from holding more than one position in the state government where the second office is incompatible with the first or is compensated, or from holding positions in more than one branch of the state government (e.g., the

⁶Holmes v. Osborn, 57 Ariz. 522, 115 P.2d 775 (1942). Constitutional provisions against the holding of more than one office "are ordinarily held not to affect positions which are not, strictly speaking, offices." 67 C.J.S. Officers, sec. 23, at 146 (1950).

⁷Parker v. Riley, 18 Cal.2d 83, 113 P.2d 873, 134 A.L.R. 1405 (1941); Gillespie v. Barrett, 368 Ill. 612, 15 N.E.2d 513 (1938).

⁸Parker v. Riley, *supra* n. 7.

⁹Gillespie v. Barrett, *supra* n. 7; In Re Opinion of the Justices, 337 Mass. 777, 150 N.E.2d 693 (1958); In Re Opinion of the Justices, 208 Mass. 610, 613, 94 N.E. 852 (1911); In Re Opinion of the Justices, 302 Mass. 605, 616, 620, 19 N.E.2d 807 (1939).

Legislature and the Judiciary or the Legislature and the Executive Branch).¹⁰ However, such provisions should cause no problems. In order to serve the purposes contemplated, it would not be necessary to consider membership on the MCO Board of Trustees as a separate "state office or employment." Indeed, the rationale just presented makes it clear that a state official holding a responsible position in the government could be performing his trustee duties in connection with his regular duties and in furtherance of them. On the other hand, if the individual selected to represent the state interest has no other position with the state government, his service could not possibly be construed as the holding of more than one office. Furthermore, service on a Board of Trustees is generally an unremunerated position and so would raise no question of double compensation.

The problems which have just been examined are not unique to New England. The permissible activities of public officers and employees and limitations on them are relevant in all of the fifty states. The applicable principles were first developed at common law and were freely borrowed and built by the courts of many jurisdictions without any discernable regional differences in approach. Similarly, constitutional and statutory provisions are generally borrowed from one state to another and enunciate common principles. There are, of course, differences in detail which make it necessary to ascertain the law of individual jurisdictions. However, for present purposes, it has been desirable to cite authorities both from the six states of New England and from outside the region, where they were the most applicable statements of the principles involved or where they were considered especially helpful to an understanding of the issues.

Implementing Action

For the Massachusetts College of Optometry, under that name or any other, to become a public institution owned and administered jointly by several states would probably require legislative action. However, to accomplish the first steps set forth in this appendix should take no more than administrative action and the availability of funds to make student support contracts with the College.

To begin the process, MCO would need to take concrete action designed to show that it was committed to becoming a publicly supported regional institution and to extend an appropriate invitation to the states. The precise methods for proceeding along these lines are within the power of MCO to determine. However, to make the plan discussed here specific enough to provide a basis for concrete discussion, two draft documents are offered. The first is a possible policy statement such as could be adopted

¹⁰E.g., Vt. Const., Ch. II, Sec. 50 (which additionally precludes a federal employee from holding a state position. Federal customs inspector ineligible for appointment to board of trustees of Vermont state colleges. 1962-1964 Op. Atty. Gen. 119.) (1972); Mass. Const., Art. 65, and Pt. 2, C. 6, Art. 2; McCabe v. Kane, 101 R.I. 119, 221 A.2d 103 (1966); State v. Brown, 5 R.I. (1857); State ex rel. Metcalf v. Goff, 15 R.I. 505, 9 A. 226 (1887); 67 C.J.S. Officers, sec. 23(a), at 133, (3) at 141, and (7)(a), at 144 (1950).

by the members of the College Corporation. The other is an amendment to the MCO By-Laws. In both of these drafts, it is assumed that MCO would first have taken action changing its name to the New England College of Optometry. Such a change would not be a legal necessity but it would obviously facilitate efforts to identify the College with the whole of New England.

Statement of Policy Proposed for Adoption by Massachusetts College of Optometry

The New England College of Optometry is the only existing resource for the provision of optometric education in New England. It has fulfilled this role for a number of years as a wholly private non profit institution but finds increasingly difficulty in continuing to serve the New England region without significant assistance from the states of the area.

The College proposes to continue to serve the needs of the New England region for optometric education and to provide related programs which will promote proper eye care and health on a regional basis.

To these ends, it is the objective of the College to become an institution of higher learning responsible to and supported by some or all of the New England states to the extent that the College fulfills the needs of their residents for optometric education and related services.

The President and Board of Trustees, and pursuant to their direction, any and all other officers, employees and agents of the College are authorized and directed to enter into and conduct such exploratory investigations and negotiations as may be calculated to further the attainment of the policy stated herein.

Comment

This Statement of Policy, or one similar to it, should be adopted by the members of the College Corporation. These members are the body which would be the stockholders if MCO were a business corporation rather than a non profit entity. Consequently, they are the "owners" and must provide the basis for the surrender of some or all of their ownership rights, if the states are to share in them.

While the College Administration and the Board of Trustees might be justified in exploring a change in the institution's status, especially in the light of present financial problems, the taking of such a step would appear to be of so basic a nature as to benefit from the provision of policy direction by the members of the corporation. Moreover, a declaration from them would be helpful in indicating to the state governments that the College is really prepared to move in the direction of becoming a public entity.

PROPOSED REVISION IN THE BY-LAWS OF
MASSACHUSETTS COLLEGE OF OPTOMETRY

The Corporate By-Laws for MCO presently contain several articles prescribing the size, terms of members, meetings and powers of the Board of Trustees. However, aside from expressly providing that the President of the College may be a Trustee, the By-Laws contain no other indication or limitation on the kinds of trustees who may be chosen and require no special qualifications of members of the Board. Consequently, it would be possible for the members of the College Corporation to select an individual who happens to be an official of a state government. At present, however, there is neither indication nor any expression in the By-Laws of a reason that would suggest such a course. To make clear the intention of the College to invite a state government connection, it would therefore be appropriate for the By-Laws to be amended so as specifically to recognize and facilitate the possibility of service on the Board by representatives of the governments of states.

Articles III, IV and V of the By-Laws relate to the Board of Trustees. They are reproduced below, partly for informational purposes and partly to show the amendments in them which could make invitations to the states to be represented specific and meaningful.

The effort is to keep these changes minimal and flexible. Undoubtedly, more extensive changes would be necessary if the College were to become a predominantly public institution. However, to begin the process of conversion as simply and rapidly as possible, it is suggested that these relatively modest changes could suffice. Articles III and IV show amendments. Article V carries only a note concerning its suitability for a body of a public character.

All of the amendments suggested would be additions to the present By-Law provisions. They are shown by underscoring.

ARTICLE III

Board of Trustees

Section 1: There shall be a Board of not less than eleven (11) nor more than twenty-one (21) trustees elected by the members of the Corporation. The trustees shall be elected for staggered terms so that approximately one-third shall be replaced each year. At each annual meeting or special meeting of the Corporation, trustees shall be elected to fill the offices of those trustees whose terms of office shall have expired and to fill vacancies in the Board caused by death, resignation or otherwise. Each trustee shall hold office until the expiration of his term and until his successor shall be elected and qualified.

The President of the College and such other persons, not exceeding five (5) in number, as are designated by the Board of Trustees shall serve as ex officio members, with all of the rights, powers and responsibilities of trustees; and if the trustees so decide, the ex officio trustees shall be in addition to the maximum of twenty-one (21) trustees herein otherwise provided for.

Section 2: At any annual or special meeting of the members of the Corporation, additional trustees may be elected to serve for such term or terms as shall then be determined. The government of any state, in such manner as its laws may provide or allow, may be represented on the Board of Trustees by one or more members in accordance with the procedures and with the effect provided herein. A state which provides financial support for the College through contracts on behalf of a number of students constituting ten percent or more of the total full-time enrollment shall be requested to nominate a member of the Board of Trustees and such nominee may serve either as an official or unofficial representative of the state, as its laws may allow. The members of the Corporation shall confirm any such nominee as a member and shall specify his term. A state which does not meet the foregoing requirement may be requested to nominate one or more members of the Board of Trustees, if the members of the Corporation upon the recommendation of the President or the Board of Trustees, determines that such state has or should be encouraged to have an official interest in or connection with the College. Any person serving on the Board of Trustees as an official or unofficial representative of a state government shall have all the rights, powers and privileges of any other member of the Board of Trustees.

Section 3: There may be an Executive Committee of not less than five (5) nor more than seven (7) members to be elected annually from and by the members of the Board of Trustees. The Chairman of the Board of Trustees and the President of the College shall serve as ex officio members of the Executive Committee and shall be included in the aforesaid limitation on the number of members of the Executive Committee. The duties of the Executive Committee shall be to act in behalf of the Corporation while the Board of Trustees is not in session, exercising the powers of the Board of Trustees in all such matters as the Board may from time to time describe or authorize by vote. A majority of the Executive Committee shall be a quorum thereof, and it shall require a majority of the whole Executive Committee to act. Officers of the Corporation who serve on the Executive Committee will serve in the same capacity on the Executive Committee.

ARTICLE IV

Meetings of the Board of Trustees

- Section 1: A meeting of the Board of Trustees shall be held without call or formal notice immediately after the annual meeting of the members of the Corporation; and meetings may be held at such other times and places as the Board of Trustees may from time to time determine.
- Section 2: Special meetings of the Board of Trustees may be called at any time and place by the Chairman or by any two (2) trustees. Meetings of the Board of Trustees may be held either within or without the Commonwealth of Massachusetts.
- Section 3: Notice of the time and place of each special meeting of the Board of Trustees shall be given to each trustee by the Clerk, or by any other officer or by the trustees calling such meeting, at least three (3) days before the time of the meeting by telegram, or by written notice mailed postage prepaid, addressed to each trustee at his last known residence or business address. Any meeting, however, of the Board of Trustees shall be a legal meeting for the transaction of business, notwithstanding that notice shall not have been given to all trustees as above provided, if all the trustees are present or if due notice of such meeting shall have been given to or waived in writing by each trustee not present, or consent to the action taken shall be signed by all trustees not present.
- Section 4: A majority of the trustees shall constitute a quorum for the transaction of business but a lesser number may adjourn any meeting from time to time and the meeting may be held as adjourned without further notice. When a quorum is present at any meeting, a majority of the trustees present shall decide any question brought before such meeting except as herein otherwise expressly provided.
- Section 5: At any time when one or more members of the Board of Trustees is an official or unofficial representative of state government, the provisions of Sections 1-4 of this article shall apply, except that all meetings of the Board of Trustees shall require notice by mail of not less than twenty-five days. However, such notice may be waived in writing, but in order to be valid any such waiver must be by all members of the Board of Trustees.

ARTICLE V

Powers of the Board of Trustees

The Board of Trustees shall have and may exercise all the powers of the Corporation except as otherwise provided by law or by these By-Laws. Without limiting its general power and authority as herein provided, the Board of Trustees shall have specific power from time to time by itself or by such duly authorized agents or officers as it may appoint or elect as follows:

- (a) To manage the School and its dormitories, boarding houses, libraries and other properties, business and activities of the Corporation; to employ, determine the powers, compensation and duties of and discharge instructors, agents and other employees; and to authorize or make contracts in the name and behalf of the College;
- (b) To manage and expend the College's funds and assets and to invest and re-invest the same in real or personal property of any kind, tangible or intangible, or any interest therein, whether or not the investments chosen would be considered a proper investment for a trustee, and irrespective of the proportion of such funds placed in any one or more investments, and to exercise all the rights, powers and privileges pertaining to the ownership of any securities forming part of the College's assets to the same extent that an individual might exercise;
- (c) To purchase, acquire, take or give leases, to operate, use, sell, exchange and otherwise dispose of real estate or personal property which may be deemed to be suitable or convenient for or in connection with the purposes or activities of the College; and to receive property by gift or by will or otherwise as additions to the College's assets; and
- (d) To borrow money and to authorize the giving of notes or other obligations therefore and, if deemed desirable, to secure the payment thereof by mortgage, pledge, assignment, transfer or conveyance of any part of the College's property and assets then owned or thereafter acquired.

CommentArticle III.

The additions to Article III, Section 2 are intended to make service of representatives selected by the states possible in accordance with state laws and procedures. It would be impracticable for the by-laws of a private corporation to specify too precisely how the states should appoint their members of the Board of Trustees. The By-Laws cannot bind or compel the state governments to proceed in a particular fashion, especially if it is

inconsistent with statutes or established usages. For this reason, the suggested amendment would leave the decisions and mechanics for state appointments up to the state concerned.

Since the members of the corporation are the body with power to elect the Board of Trustees, the amendatory language describes the role of the states as the nominating of their representatives. However, if the By-Laws were to be as suggested, the members of the corporation would be required to confirm the state nominees. Consequently, the states would be represented by trustees of their own choosing.

It is also suggested that trustees could be added at special meetings of the members of the corporation as well as at the annual meeting. This would make it possible to confirm state trustees within a reasonable time after their nomination.

The figure of ten percent provided for the portion of enrollment which would entitle a state to representation on the Board is suggestive only. Under present conditions, it would mean that a state which by contract was providing financial support on account of at least twenty-five to thirty students would be so entitled. The concept is that state support should be substantial to result in representation as a matter of right. However, the College might wish to invite representation if support of other kinds were offered or if the invitation was meant to encourage state interest. Accordingly, it is provided that the members of the corporation could extend the privilege, if they thought it desirable to do so.

Article IV.

A private organization, particularly one in which control is closely held, can operate more flexibly or informally than a public body or one with a diverse and dispersed membership.

It cannot be presumed that state officials scattered throughout several states would be likely to assemble for meetings of the College Board unless they receive regular notice. Furthermore, it should be noted that out-of-state travel frequently requires special clearances and approvals for which three weeks is generally considered to be a prudent estimate of the necessary processing time.

Article V.

No amendments are suggested for Article V at this time. However, the contents of this article would have to be considerably revised to fit the requirements for and limitations placed upon public agencies. For example, the flexibility of the investment and borrowing provisions found in items (b) and (d) would not fit any public educational institution. However, the participation of state nominated members of the Board of Trustees would not of itself make the College a public body. Accordingly, for this first stage of the transition, the present corporate usages could remain. So long as the states participated exclusively or primarily through contracts for the education of their residents, the states would not be incurring any risks. As long as the education being purchased was paid for at reasonable prices, the state funds would be obtaining appropriate value.

APPENDIX B

MASSACHUSETTS COLLEGE OF OPTOMETRY

NOTES TO COMBINED FINANCIAL STATEMENTS

JUNE 30, 1975

1. Investments exclusive of physical plant are recorded at cost; investments received by gift are carried at market value at the date of acquisition. Quoted market value of investments (all marketable securities) at June 30, 1975 was \$2,849 and June 30, 1974, \$2,611.
2. Physical plant is stated at cost at date of acquisition, except furniture, fixtures, equipment and library assets which are stated at their carrying value as of June 30, 1969. As prescribed by current publications, depreciation on physical plant and equipment is not recorded. During the fiscal year 1974, the College demolished the building at 178 Newbury Street at a cost of \$17,500; which cost has been capitalized.

The College has entered into an option agreement which expires on July 1, 1975, with monthly extensions through December 1, 1975, to sell its property located at 178-180 Newbury Street, Boston, Massachusetts. The sales price will be \$450,000; with an increase in sales price (\$50,000) if certain zoning restrictions are modified within eighteen months from the date of delivery of the deed. The non-refundable original option payment (\$10,000) will be applied against the sales price; while additional monthly payments (\$5,000 each) will not be. The option has been extended through September 1, 1975.

3. Notes Payable - Secured

A note, secured by specific equipment; with monthly payment of \$211, the final payment due in February 1978.

Due within one year	\$2,533	
Due after one year	<u>4,222</u>	<u>\$6,755</u>

4. Notes Payable - Unsecured

8½% time note due July 28, 1975	<u>\$50,000</u>
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5. Accounts receivable and payable of the Retirement of Indebtedness Fund represent real estate taxes due the College from the lessee of 180 Newbury Street and the corresponding payment of these taxes by the College. Usually the lessee pays the taxes direct to the City, but as yet, he has not done so.

MASSACHUSETTS COLLEGE OF OPTOMETRY
NOTES TO COMBINED FINANCIAL STATEMENTS

JUNE 30, 1975

	<u>Due Within One Year</u>	<u>Due After One Year</u>
6. Long-term debt of the plant funds include the following:		
a) Mortgage note with an interest rate of 1% above prime, with monthly minimum principal payment of 2,000 plus interest, secured by property with a carrying value of \$501,531.	24,000	262,370
b) Mortgage note with an interest rate of 6%, with monthly principal and interest payment of \$1,667, secured by property with a carrying value of \$286,000.	16,029	57,239
c) Mortgage note with an interest rate of 8.50%, with monthly principal payment of \$1250 plus interest, secured by property with a carrying value of \$286,500.	15,000	178,732
d) Mortgage notes with an interest rate of 4% with fluctuating quarterly payments as described below applied first against interest and then against principal.		
The mortgage document contains the following regards payments to be made:		
1) Minimum payments with a balloon payment of \$333,897 on November 10, 1977.		
2) Yearly excess payment necessitated by building fund drive receipts exceeding a specific figure as outlined within the mortgage documents.		
3) Discounted prepayments.		
4) Payment required because of a sale of the property located at 178 Newbury Street, Boston, Massachusetts.	32,920	378,757
Total	<u>965,047</u>	<u>877,098</u>

MASSACHUSETTS COLLEGE OF OPTOMETRY

NOTES TO COMBINED FINANCIAL STATEMENTS

JUNE 30, 1975

7. The accompanying financial statements do not reflect, in both revenues and expenditures, fee reductions granted to certain groups as a means of increasing the number of patients and occasions of service to meet the necessary educational goals of the College and the accreditation requirements of the Council on Education of the American Optometric Association. The fee reductions in 1975 were approximately \$72,000 (1974 - approximately \$57,000).
8. The College applied for, but was not awarded financial distress funds in 1975 from the U.S. Department of Health, Education and Welfare. The College received \$147,628 financial distress funds in 1974 from the same agency.
9. The College has the following benefits for its employees:
 - a) Retirement Plan

The College has a contributory pension plan with the Teachers Insurance and Annuity Association of America providing for deferred annuity contracts for all participating qualified professional personnel. The College contributes a minimum of five percent of salary.
 - b) Group Insurance

The College provides long-term disability insurance for all eligible professional employees.
 - c) Medical Insurance

The College has optional medical insurance for all employees who desire to join. The individual participates with the College in the payment of premiums.
10. Pledges totaling \$157,635 restricted to debt retirement, are due to be collected over the next five (5) fiscal years as follows:

1976	140,043 (includes past due of \$79,440)
1977	11,983
1978	4,709
1979	500
1980 and later	400

It is not practical to estimate the net realizable value of such pledges.

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